The Lumleian Lectures
ON
SOME CIRRHOSES OF THE LIVER.

Delivered before the Royal College of Physicians of London on March 29th and April 3rd and 5th, 1900,

BY W. B. CHEADLE, M.D. CANTAB., F.R.C.P. LOND.,

SENIOR PHYSICIAN AND LECTURER ON CLINICAL MEDICINE AT ST. MARY'S HOSPITAL; CONSULTING PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET.

LECTURE III.[1]

Delivered on April 5th.

TREATMENT.

MR. PRESIDENT AND GENTLEMEN,—The treatment of cirrhosis resolves itself chiefly into an attempt to preserve the *status quo* as far as the liver is concerned, to prevent the disease advancing, and to relieve any difficulties or imperfections which may arise in the bodily condition as the result of the hepatic inefficiency. No remedy will remove the fibrous tissue which has choked the liver cells. No drug will restore the cells thus destroyed. The only condition in which the invading agent can be removed to some extent by treatment is in the early stage of syphilitic cirrhosis, when the gummata are not yet organised and the arteritis and perihepatic inflammation are comparatively recent. For the rest all that can be done is to attempt to relieve the injured machinery and supplement its powers so that the crippled organism may survive. When the injury is not extreme this can be done and the cirrhotic patient hold on to life in fair health and comfort, sometimes for years.

With regard to the first great canon of treatment, the prevention of increase of fibrosis and the destruction of liver tissue, absolute abstention from alcohol and all stimulating ingesta is of course the prime necessity. It is as essential in the syphilitic, malarial, and nephritic cases as in those of direct alcoholic origin. There is, however, one reservation to be made. When the last stage of emaciation and exhaustion has been reached the total privation of alcohol, as we often see in hospital wards, hastens the final collapse. And in the same way all foods which tax especially the physiological function of the liver and therefore tend to embarrass and engorge it, such as those rich in fats and sugar, should also be given in reduced quantity or altogether prohibited, The diet should be restricted to milk, eggs, the simpler proteids, bread, and fresh fruit and vegetables. It is to be remembered that not only is the passage of nutriment which has been prepared by gastric and intestinal digestion for distribution by the systemic vessels interfered with by the portal obstruction, but that the glandular structure of the liver is partly destroyed and its physiological function necessarily impaired also. We are too apt, I think, to look upon the question of nutrition in cirrhosis as one of mere difficulty of transport, whereas it is largely one of preparation for absorption and assimilation, and of elimination. The secretion of bile, the glycogenic conversion of the carbonaceous elements of food, the curious part played by the liver in the metabolism of nitrogenous waste, are all interfered with, and the general nutrition of the body suffers in like degree. In all cases, therefore, where signs of defective nutrition appear, such as wasting, anæmia, and debility, it is well to supplement the work of the digestive machinery by artificial means. Predigested foods, especially pancreatised preparations or pancreatin in keratin capsules given with food, are useful aids to the defective liver function. Further, taking into consideration the embarrassment of the portal circulation and the consequent engorgement of all the viscera which drain into the portal system, this condition should be relieved by mild laxatives, such as salts of soda and magnesia. Rhubarb or cascara or other unirritating drug of the kind may be added to quicken the action of the salines if necessary, but anything like hard purging should be avoided. To these laxatives iron also or the bitter tonics, as quinine or nux vomica, may be added on occasion. In the flatulent dyspepsia which so often troubles the cirrhotic patient, full doses of bicarbonate of soda with aromatics, or hyposulphite of soda, or creasote, or carbolic acid, may be given to arrest fermentation.

There are, however, three drugs which more than all others are capable of signal service in appropriate cases; they are mercury, iodide of potassium, and digitalis. Mercury and the iodides, especially the latter, sometimes effect a marvellous change in syphilitic cirrhosis in virtue of their power in arresting gummatous formation, endarteritis, perihepatitis, and their consequences. The usual rule laid down is that if there is any reason to suppose the affection to be syphilitic iodide of potassium should be given. I would, however, urge that these remedies should be given, not only when there is reason to suppose the cause to be syphilitic, but also given steadily in all cases where by any remote possibility the syphilitic factor may be concerned, even when the patient is convicted of alcoholism. As I have pointed out, the social connexion between syphilisation and alcoholism is naturally a close one: moreover, the syphilitic liver frequently closely imitates the alcoholic liver and a mistake may be fatal. In a case recently under my care the liver was studded with gummata, bound down by abundant perihepatitis, and tucked away under the diaphragm, so as to present all the physical signs of a small contracted liver. As to the patient, there was no history of syphilis to be made out on minute inquiry. He was a married man with a family of healthy children. Antisyphilitics were given at first, and then, unfortunately, under the strong presumption of alcoholism they were abandoned and the chance of recovery was lost.

Digitalis, again, is of material service in those numerous cases in which there is weakness and dilatation of the heart. The enfeebled dilated state of the heart so commonly present in cirrhosis, and the condition of the cardiac muscle found after death explain the often beneficial influence of digitalis and other cardiac tonics.

THE TREATMENT OF ASCITES.

The main interest in the treatment of cirrhosis, however, centres in the ascites. In the majority of cases it is this symptom which betrays the existence of the disease. It is a sign that tension in the portal vein and its tributaries in the peritoneum has been raised to the oozing point or has set up inflammatory effusion; that the flow of nutriment from the alimentary canal into the general circulation is gravely impeded; and that the liver function is seriously impaired. It is not, however, from this point of view alone that the advent of ascites becomes so important. It is rather the mechanical effect of the distension of the abdomen with fluid which is so serious. The diaphragm is pushed upwards so that abdominal respiration almost ceases and the lungs are imperfectly inflated. Congestion, collapse, and basal bronchitis follow and not infrequently effusion into the pleura in addition. The heart is pressed upwards and embarrassed and the impediment to the circulation already existing in the pulmonary and systemic vessels is thereby greatly increased. The movements of the stomach are hampered and the circulation in that organ, so vital to nutrition, already interfered with by the portal blockage, is made still more difficult. In the same way the spleen, the pancreas, the intestines, and the liver itself all suffer from the pressure of fluid upon them and upon the vessels of the portal system, and the vicarious flow through the venæ communicantes is interfered with in like manner. The kidneys, indeed, which do not discharge into the portal system, are not directly affected by the venous block there. The renal veins are, however, affected by the pressure of the effusion into the abdominal cavity, and the congestion of the kidneys which arises in extreme ascites affords significant evidence of the disastrous effect of this simple mechanical pressure. The urine becomes scanty, high-coloured, albuminous, and sometimes contains casts. There ensues, in fact, a nephritis; disturbance of the renal function; and a uræmia adding systemic poisoning to the other disorders.

Although there may be difference of opinion as to the course to be pursued in order to remove the fluid and to relieve this general oppression of the vital organs, there can be none, I think, as to the necessity for doing so by some means or other. The only question is when and how it should be done.

There is no more painful clinical picture of hopeless

[1] Lectures I. and II. were published in THE LANCET of March 31st and April 7th, 1900, respectively.

disease and helpless therapeutics than these cases of ascite left unrelieved in their increasing exhaustion and distress. The question is not one of mere relief of distress, however; it is one of releasing the embarrassed vital organs from fatal pressure—of improving the general pathological condition and making temporary recovery possible. For, as I have shown, ascites does not arise in the last hopeless stages of atrophic cirrhosis only, but now and again appears earlier, when more than mere temporary relief may be hoped for. The practice adopted for this purpose of old was to attempt to carry off the fluid by hydragogue purgatives and by diuretics. Now with regard to the former it may be affirmed without hesitation that hard purging is in these cases a pernicious and fatal practice. It is in most instances absolutely ineffectual as a means of reducing the dropsy; it is most effectual in reducing the strength and nutrition of the cirrhotic patient already enfeebled by the difficulty of drawing a minimum of aliment through the obstructed vessels. This difficulty is increased by purgation; the nutrient fluid is hurried through the alimentary canal too rapidly for absorption. The flow is set outwards instead of inwards. The plan of giving the purgative in the early morning before food is taken mitigates, but does not neutralise, the ill-effects; a large amount of nutrient material remaining from previous meals is drained away. Further, this favours the onset of diarrhœa, which is only too apt to set in spontaneously, is most difficult to control, and is of evil augury. The expression "purged to death" is not infrequently sadly appropriate to the records of cirrhotic ascites. Therefore although a few sharp purges may be useful at the outset when the patient is comparatively robust, free purging is a fatal device when the patient is enfeebled, and in any case is to be deprecated as a continued treatment.

With regard to diuretics, it may be said that where the kidneys are sound they are harmless and that where diseased they are injurious. They are, however, constantly futile. Cases are, indeed, recorded where the action of diuretics is credited with the cure of abdominal dropsy. I have tried them all, and as a means of removing the copious effusions of hepatic ascites with entire want of success. As a matter of fact, in this condition, as Murchison pointed out, "diuretics are of little avail." The pressure on the renal veins so interferes with the circulation through the kidneys that diuresis becomes impossible. It has been found that whilst the most powerful diuretics have failed to excite the flow of urine in ascites the removal of fluid by paracentesis is often followed by a copious flow even without the aid of diuretics.

In a paper published in THE LANCET more than 20 years ago[2] I discussed the treatment of dropsy of various forms on the plan of restricting the inflow of fluid by restricting the drink of the patient, compelling the body by limiting the intake to reappropriate some of the outflow and thus favouring absorption of effusions. I found that in cases of renal dropsy it was unquestionably injurious, lessening the flow of urinary excretion; in cases of cardiac dropsy of doubtful service; but in hepatic ascites usually well borne and of some value as an adjunct to other treatment. In a recent article on dropsy Dr. W. H. Dickinson[3] cites two cases of hepatic ascites in which this method proved successful.

PARACENTESIS.

The only reliable plan of removing the abdominal fluid, however, is to draw it off by mechanical means. The postponement of the operation until the vital machinery is seriously embarrassed is, I am convinced, a fatal error. Why should we persist in exhausting our debilitated patient in the vain attempt to remove fluid by drugs through the roundabout channel of bowel and kidney and, whilst we waste time in these futile endeavours, allow the vital organs to become more and more engorged and injured when it can be withdrawn directly and more effectually by the simple agency of a Southey's trocar? The good effected is great—the risk in these days of antiseptic surgery of the smallest. I presume that the main reason for the tardy adoption of earlier paracentesis lies in the fear of septic peritonitis and the fact that the weight of authority has been overwhelmingly against it except as a last resource. Sir Thomas Watson, Niemeyer, Thierfelder, Aitken, Bristowe—chiefly on the ground that it was useful only for the relief of suffering—and Frerichs objected to it on the ground that the counter-pressure of the ascitic fluid upon the peritoneal vessels lessened the rapidity of effusion. Murchison objected on account of the loss of albumin involved. Murchison and Bristowe, however, modified their views at a later period and sanctioned paracentesis before an extreme stage was reached. I have known only four instances in which paracentesis proved fatal from resultant peritonitis. Two were in the period before antiseptic precautions were observed; the third was due to accidental displacement and infection of the drainage-tube by the patient during the process; the remaining one was unexplained. It is true that when the operation is postponed until the patient is in the last stage of cachexia and exhaustion tapping sometimes hastens the final failure; but I have never seen this in the earlier stages before the general health has been gravely impaired. As a matter of curious interest I may say that I have recently had under my care at St. Mary's Hospital a man, aged 49 years, who when a boy was tapped for ascites in St. George's Hospital, I think by Mr. Cæsar Hawkins, 40 years ago.

The first physician to insist upon the advisability of tapping early was, I think, Dr. Austin Flint, in America, as long ago as 1863. Writing in 1883[4] he says: "In concluding my clinical report on ascites 20 years ago I used the following language: 'Unpromising as are the majority of cases of ascites I cannot but believe that, as regards prolongation of life and as much improvement as is compatible with existing structural disease, the success of medical practice would be enhanced by employing less than has been the custom diuretics, hydragogue cathartics, and depressing remedies and by resorting earlier than is usually done to tapping. After the added experience of 20 years I hold to the same belief with a strong conviction of its correctness as based on reason and clinical facts," and he gives 10 cases showing favourable results in support of this opinion. In 1872 Dr. Frederick Roberts[5] advocated repeated tapping and also gave a series of cases as evidence of its success. In 1873 Dr. McCrew[6] and in 1881 Dr. Duncan[7] expressed similar conclusions.

When I ventured to urge the employment of early and repeated paracentesis in hepatic ascites in a discussion on the subject at the meeting of the British Medical Association in Nottingham eight years ago, opinion upon the subject proved to be still much divided. At that time all the text-books of medicine, with a solitary exception as far as I know, agreed in repeating, without question, the old stereotyped rule that the operation should be postponed as late as possible. Now, however, this view has been modified in so far that paracentesis is sanctioned by most authorities when the pressure of the fluid is obviously causing embarrassment of the viscera. As a matter of my personal experience, in every instance of well-marked hepatic ascites which has done well early and repeated paracentesis has formed an essential part of treatment. Before this was adopted the results, in my practice at all events, presented one long, uniform list of melancholy failures; and in the vast majority of cases of hepatic ascites recorded, where the condition has been successfully treated by others, repeated paracentesis has also formed a main feature of treatment. In the least favourable form of atrophic cirrhosis even, where the good effected is only transitory and nothing can reasonably be hoped for beyond a respite of a few months, paracentesis is beneficial if not left too late. The early removal of the ascitic fluid enables the patient to live longer in comparative comfort instead of suffering a shortened life in hopeless unmitigated distress.

In discussing the question of viability and prognosis in the preceding lecture I instanced a number of cases which support this view. In most of the fatal cases the correctness of diagnosis was proved by post-mortem examination afterwards. The only explanation of the less favourable results obtained by some others which I can offer is that possibly the operation was postponed to too advanced a stage of the disease, or that it was not systematically repeated at proper intervals, and the case retained under close observation and treatment throughout. Tapping in the very last stage of cirrhosis frequently hastens death;

[2] THE LANCET, Nov. 24th (p. 758) and Dec. 1st (p. 794), 8th (p. 838), and 15th (p. 877), 1877.

[3] Allbutt's System of Medicine, vol. v., p. 690.

[4] Brit. Med. Jour., vol. ii., 1883, p. 566.

[5] Practitioner, 1872.

[6] Dublin Medical Journal, 1873.

[7] Brit. Med. Jour., 1881.

and a single paracentesis without repetition, or repeated only too late when symptoms again become urgent, is of little service. In the successful cases which I have to record the patients were retained in hospital, or under constant medical care in private, until fluid ceased to return and health was fairly restored. Tap and turn out is a most unsatisfactory practice, futile and delusive. The removal of fluid by continuous drainage has been practised with partial success by Dr. Cuillé and Dr. Elliot in America and by Dr. Urso in Italy. In some cases of mine where the puncture of paracentesis has remained open the results have been satisfactory except for the manifest discomfort involved. A more drastic plan of promoting adhesions of the liver and spleen to the parietes by surgical operation has been advocated with the idea of aiding the development of new vascular channels. It seems at first sight somewhat like the partial closure of a safety valve, preventing, for a time at least, automatic easing of the portal vascular stress. Nature's operations in this direction of adhesions in cirrhosis are, however, not apparently very favourable and associated with the most intractable cases. They do not suggest an imitation of her methods.

The course of these cases of cirrhosis which have resulted in restoration of health for lengthened periods, cases in which the return to health has been such as to warrant the term "recovery," is most satisfactorily illustrated, perhaps, by a brief description of some of the most remarkable and representative amongst them.

The first was that of a patient sent into St. Mary's Hospital in October, 1883, as suffering from Bright's disease. He was a man, aged 30 years, of great stature and find build, slightly jaundiced, and he had lost a good deal of flesh. The ascites was extreme, the legs below the knees were œdematous, but there was no general dropsy. The liver was greatly enlarged and hard, reaching half way to the umbilicus; the heart was displaced upwards, but the sounds were normal; the lungs were clear. The urine contained one-sixth albumin and both hyaline and granular casts, but no blood. The patient confessed to taking from seven to eight pints of beer a day, with half-a-quartern of rum before breakfast; and he suffered from morning diarrhœa. The case was at once set down as one of alcoholic cirrhosis and treated in orthodox fashion by cathartics and diuretics and tonics, paracentesis being postponed until urgent symptoms might arise. The man got steadily worse; the lungs became engorged, distension was extreme, and dyspnœa and distress were great. Then, *secundum artem*, paracentesis was performed as a mere matter of relief, 400 ounces being drawn off. The patient slept well that night for the first time for many weeks. At this juncture the patient complained of sore-throat and a small ulcer was observed on the soft palate. It was then remembered that the patient had had both testicles removed, one for "strumous disease" five years before, and the second 18 months ago for "tuberculous affection." On further inquiry it was ascertained that he had suffered from venereal disease 15 years ago and chancre scars were visible. Although the condition of the liver itself was not suggestive of syphilis it was recognised that surgeons were human and might be fallible and that possibly the affection of the testicles was syphilitic, not tuberculous. Iodide of potassium was accordingly given in doses of 10 grains three times a day. This was not followed by any improvement, and in three weeks the man had fallen back into his former condition of extreme distension and urgent distress. Paracentesis was again performed and the iodide was continued. From this time improvement set in and was continuous. Albumin disappeared from the urine. The appetite returned. Tapping was repeated four times more. The intervals between the tappings grew longer, the amount of fluid withdrawn was less, and after the sixth operation returned no more. The patient was finally discharged seven months after admission, to all appearance strong and hale, without a trace of renal or cardiac disease. The liver, however, remained large and hard as before. The man came to hospital for examination one and a half years afterwards; he had remained well and robust and had walked 10 miles with his horses the day previously. The liver was enlarged and hard as before.

This case was especially interesting to me because up to this time I had never seen recovery from hepatic ascites when the dropsy, emaciation, and exhaustion had progressed to such extent as in this instance. In all previous cases, in spite of treatment, and I am afraid too often in consequence of treatment, the patients invariably went from bad to worse. In one or two cases I had seen ascites disappear but never the patient get well. The relief afforded to the oppressed organs by the removal of the ascitic fluid, the absence of any material progress under iodide of potassium until the general deadlock was relieved by a second tapping, followed by frequent repetition before serious visceral engorgement recurred, compelled the opinion that blind following of the routine practice of postponing mechanical relief as late as possible was a mistake, and that not only were the patients' sufferings thus needlessly aggravated but their chance of life was seriously endangered or destroyed. Subsequent experience has amply confirmed this judgment. The absence of improvement under iodide at first and the favourable effect of tapping leave it uncertain how far alcohol and how far syphilis were factors in the case; probably both played a part.

The next case is adduced as probably an example of that masked syphilis of which I have spoken. It is that of a woman, aged 40 years, with enormous ascites, the abdomen measuring 43½ inches. She was thin and emaciated, but was not cachectic and not jaundiced. The liver was just felt below the margin of the ribs after tapping. The body had begun to swell nearly two years before and she had already been tapped five times. She had had much pain in the back and side and subsequently her legs began to swell. There was no sign of heart or renal disease. There was no history of alcoholism and the woman had not the appearance of a drinker. There was no history of syphilis or sign of it. The patient was a married woman with one healthy child and had had no miscarriages. Physical examination showed that the dropsy was not ovarian and that there was no matting of intestines or omentum suggestive of tuberculosis. Alcoholism, heart disease, peritonitis due to kidney disease, and tuberculosis seemed all precluded, and it was judged to be most probable that the affection was syphilitic cirrhosis with perihepatitis, a condition so often neither indicated by history nor betrayed by physical evidence. This diagnosis was strongly confirmed by the subsequent progress of the case. Pleurisy, pericardial friction, and slight hæmoptysis suggested the presence of gummata in the lung—a condition found to exist in another case of syphilitic cirrhosis. She was treated by iodide of potassium and tapped three times more; she was discharged four months after admission plump and well, free from all signs of cardiac, pulmonary, or renal disease; the specific gravity of the urine was 1022, free from albumin or casts. Five months later she came back for examination and was found to all appearance to be in robust health, without sign of any dropsy, kidney disease, or heart disease, the liver being felt, as before, just below the ribs.

The next case is an example of a syphilitic cirrhosis corresponding closely in course and ending with the ordinary atrophic form. A woman, aged 46 years, was admitted to St. Mary's Hospital in 1885 for malignant disease of the liver, great ascites, and marked jaundice, which had lasted for six months, and rapid loss of flesh. The liver was greatly enlarged, hard, and somewhat uneven of surface, and it was tender. She was tapped and given iodide of potassium and went out apparently well. She came in again in the following year, was treated in like manner, and again went out in good general health. Two years later she was admitted for the third time, was again treated by paracentesis and iodide, and went out well. She remained under observation and free from ascites for five years more, when she had an attack of hæmatemesis; a year later the hæmatemesis returned, from which and intercurrent erysipelas she died. No post-mortem examination could be obtained but the liver remained greatly enlarged and hard to the last.

The next case which I have to bring forward is one in which the affection was purely alcoholic in origin. The patient, a publican, whom I saw in consultation on Nov. 5th, 1890, was a tall, powerfully built man; he had lost flesh, but was still somewhat stout and not cachectic in appearance. His abdomen was distended with fluid, measuring 40 inches in circumference at the umbilicus. The superficial veins were full and conspicuous. The liver was greatly enlarged, the edge reaching to within three inches of the umbilicus; its surface was smooth, very hard, and slightly tender; the legs were œdematous. The heart was not appreciably enlarged; the sounds were regular and free from murmur. The lungs were normal except for some bubbling râles at both bases. The urine was scanty,

high-coloured, and contained one-fourth albumin. No casts or blood could be found on microscopic examination. The account given by the patient was that he had noticed his abdomen steadily increasing in size for about six months; his legs had only begun to swell during the last fortnight. He had never had rheumatic fever or any other serious illness. He had never had syphilis nor was there anything suggestive of it. He attributed his illness to working in a damp cellar, and the cellar was no doubt a factor. He acknowledged to drinking enormous quantities of beer daily, spirits only on occasion. It was agreed that paracentesis should be performed and repeated as required. This plan was duly carried out. The distension usually returned again so as to cause discomfort in from two to three weeks. Paracentesis was performed 19 times between November and the following July, a period of upwards of eight months, amounts of fluid varying from 580 to 220 ounces being withdrawn. Iodide of potassium was given for some weeks as a measure of precaution, but without good effect, and it was abandoned and grey powder was substituted for a time. No drastic purges were given, the bowels being simply regulated by a mineral water. The albumin rapidly disappeared from the urine after the first tapping, returning fitfully from time to time for short periods with the increased pressure of reaccumulating fluid. The urine remained scanty, about 20 ounces only. Shortly after the eighteenth tapping, however, the patient, who had previously been lying on his back on bed and couch, got up and took a short drive and walk to record his vote at an election. On his return home—*post hoc* or *propter hoc*—diuresis set in and continued for some days to the amount of from 100 to 120 ounces in the 24 hours. The fluid in the abdomen did not altogether disappear and a nineteenth and last tapping was performed, after which there was no return of the ascites. The man's health continued to improve and when he called upon me a year after my first visit to him he was apparently hearty and well except that the liver was large and hard as before. There was no sign of heart disease and the urine was normal. He was able to resume an active life and had remained a rigid abstainer. From that time I lost sight of him, but his regular medical attendant, to whom I am indebted for most of the details of the case, tells me that the patient remained well, leading an active life until about two years ago, a period of eight years in all, when he fell a victim to "influenza pneumonia." From the commencement of the first illness until his death he had entirely abstained from alcohol.

The next example of hypertrophic cirrhosis of purely alcoholic origin, with extreme ascites, is perhaps the most satisfactory of all, since the subject survives to this day, nearly 12 years after first coming under treatment. In this instance the patient was a married woman, aged 32 years, who was admitted into St. Mary's Hospital for jaundice and ascites in May, 1888. She acknowledged to being a heavy drinker—of spirits chiefly—and on one occasion gave material evidence of it by coming to the hospital in a state of riotous intoxication. There was no history of syphilis or suspicion of it. The woman was fairly nourished, not thin or cachectic, although she stated that she had lost much flesh. Her face was covered with acne rosacea and venous stigmata and she was jaundiced. The abdomen was greatly distended. The superficial veins were full and tortuous; the liver was enlarged, reaching four inches below the ribs; it was extremely hard, smooth, or slightly granular. The heart sounds were normal; the urine was free from albumin. There was some œdema of the ankles. The patient was tapped seven times in the course of the five months for which she remained in hospital, large quantities of fluid being drawn off. Iodide of potassium was given for a few weeks, but discontinued since no improvement followed, and iron and digitalis were substituted. After the seventh tapping the dropsy did not return and the woman went out at the end of five months apparently well, and so remained for five years. She, however, took to drink again and was admitted for the second time in October, 1893, in a condition of enormous ascites. The abdomen measured 50½ inches, the liver was large and hard as before, was distinctly felt seven and a half inches below the costal margin as far as the umbilicus, the hepatic dulness commencing above the sixth rib. The heart was normal. The urine was free from albumin. She was tapped twice—386 ounces—and treated by iodide of potassium for a short time and then by diuretics. The latter failed to promote diuresis even after tapping. The ascites did not return and she went out well in January, 1894, three months after admission. She was admitted for the third time in 1895, tapped several times, and then discharged well. She was admitted for a fourth time in December, 1896, and again went out relieved by tapping. She was admitted for the fifth time in December, 1897, was tapped and relieved, but on account of the enormously extended flaccid abdomen all the fluid could not be removed. She was supplied with an abdominal belt and directed to return. She failed to reappear, but was sought out and induced to come into hospital again in December last (1899) to complete the cure of her ascites, and this further tapping has since been successfully done. She had remained in good health since her last visit two years ago. The following is her condition as ascertained before the last tapping two months ago. The patient looks fat and well except for some marking of the skin of the face from dilated vessels. The abdomen is very large, flaccid, and pendulous from previous distension, measuring 43 inches. It contains a considerable amount of fluid, which the patient says has remained since the last incomplete tapping, two years ago. The liver is large and very hard, with a sharp edge six inches below the ribs; it is therefore somewhat smaller than it was two years ago. The spleen is not enlarged; the superficial veins of the abdomen are conspicuous but not distended. There is no œdema of the ankles; the heart is not enlarged, there are no bruits, and the sounds and action are normal. The urine is acid, lithatic, of specific gravity 1027, and free from albumin and casts. The fæces are normal in appearance and show a good amount of biliary colouring. The permanence of the liver enlargement, the preservation of nutrition, and the absence of all signs of renal disease or of heart disease are notable. The case remains as an example of hypertrophic cirrhosis due to alcohol, uncomplicated by any other disorder, the patient surviving in fair health up to the present time, 12 years since cirrhosis and ascites first appeared.

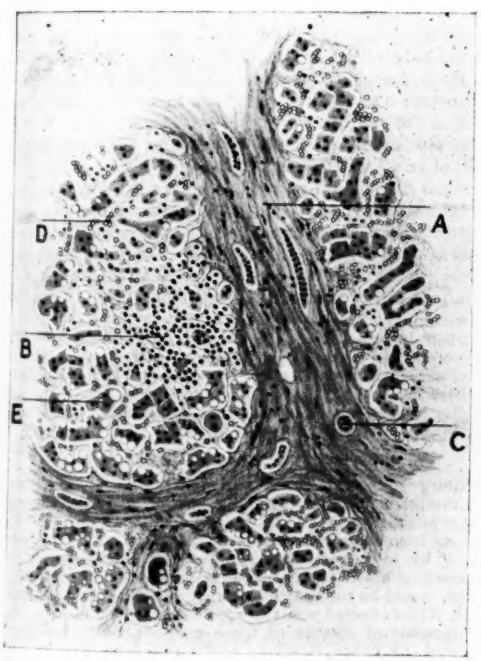
I may quote another example of alcoholic hypertrophic cirrhosis with ascites which has for two years past followed a favourable course.

The patient, a gentleman aged 47 years, was referred to me as suffering from Bright's disease and ascites. He was a broad-set, burly man, full fleshed; his face was turgid and he had some dyspnœa. The abdomen was highly distended with fluid, the veins of the surface being swollen and conspicuous. The liver was of great size, with flat, hard, woodlike surface, and sharp unyielding edge, extending four inches below the margin of the ribs; the legs and thighs were œdematous but there was no general anasarca, œdema of the loins, or puffiness of the face. The heart was somewhat enlarged; the apex beat was just outside the nipple line and the area of deep cardiac dulness increased laterally to the right margin of the sternum. Its action was quiet and regular, the first sound was somewhat short, and the impulse was not increased. A mitral bruit could be heard just over the apex. The pulse was 80, soft, regular, and of rather low tension. The lungs were clear except for slight basic catarrh. The urine was diminished in quantity, high-coloured and very acid, of specific gravity 1024, and contained albumin estimated at one-fiftieth. Careful microscopic examination revealed neither blood nor casts. The patient had indulged in alcohol habitually to great excess up to the commencement of his illness, having, as he told me, taken sometimes as many as 24 glasses of whisky-and-soda or more in a day. For the last 18 months, however, he had been a total abstainer. There was no history or sign of syphilis. The condition was clearly hepatic ascites due to alcoholic cirrhosis, with some dilatation of the heart and renal congestion dependent upon the cardiac and hepatic lesions. In view of the great abdominal pressure and distress I advised that paracentesis should be performed without delay. This was carried out by the patient's medical attendant in the country, and 300 ounces of fluid were drawn off. The leakage continued for some time afterwards. Saline laxatives and digitalis were given internally. The effect of the removal of the fluid was remarkable. When next I saw the patient four weeks afterwards the abdomen was lax but still contained some fluid, the liver was hard and large as before, reaching to within one inch of the umbilicus. The œdema of the legs had almost gone. The area of heart dulness reached to the mid-sternum. The urine was free from albumin and was of specific gravity 1021. He was already so active and free from dyspnœa and so well that he had been walking about the streets and had paid a visit to

one of the public offices on business. His appetite was excellent—indeed, exceptional—and he expressed himself as feeling perfectly well but for his remaining ascites. To sum up, he was subsequently tapped four times more, the last time in August, 1899. Since then the ascites has not returned and the medical man under whose care he has been reports in January of this year that he remains well in all respects, the enlargement of the liver and the slight local mitral bruit being the only marks of disorder. Such is the course of the case since it came under my personal observation.

The previous history, for which I am indebted to the kindness of the medical men under whose care the patient came earlier, is of great interest since it throws light upon the relation of the cardiac, hepatic, and renal disorders to the present condition of a more simple, hepatic ascites. In November, 1897, a little more than a year before I first saw him, the patient came under the care of his medical adviser in the country in a critical condition; there were great ascites, anasarca, albuminous urine, irregular pulse, and feeble failing heart. He was tapped and given digitalis and he shortly recovered sufficiently to resume his duties away. He quickly broke down again, however, and in August, 1898, came under the care of an eminent practitioner who has kindly sent me the following account of his condition at that juncture. "There was a history of kidney disease, enormous anasarca, and ascites. The heart was greatly dilated with a mitral bruit, irregularity of action, reduplication of first sound, and venous pulsation; there were marked symptoms of uræmia. The urine had a specific gravity of 1024, was highly albuminous, containing oily and epithelial casts. The liver was greatly enlarged. He was tapped nine times to the extent of 18 gallons and three pints, between August, 1898, and January, 1899. Various drugs were given; digitalis was ill borne, but strophanthus, strychnia, and salines were distinctly beneficial."

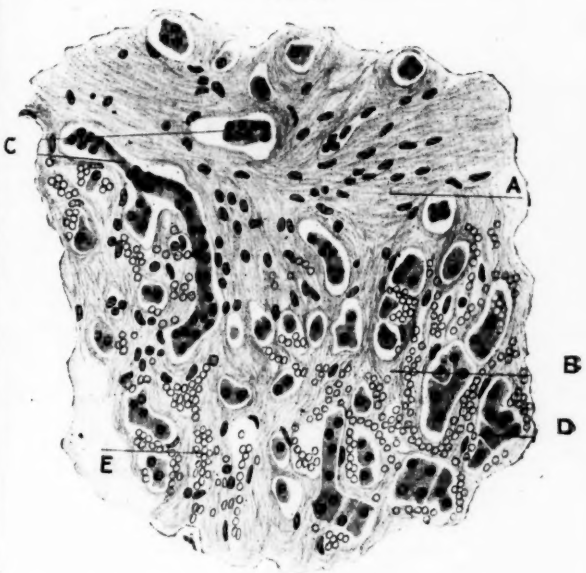
FIG. 7.



Cardiac cirrhosis. Hypertrophic cirrhosis of the liver due to long venous congestion from tricuspid incompetence. A, Coarse fibrosis. B, Commencing fibrosis. C, Pseudo-ducts. D, Blood. E, Liver substance showing fatty change.

It seems clear that in the first instance there was great cardiac dilatation, and a congestive nephritis in addition to the cirrhosis and engorgement of the liver, the cardiac dilatation being due to the enfeeblement of the cardiac wall from alcoholism. The enlargement of the liver was due partly to alcoholic fibrosis and partly to engorgement from the heart state, whilst alcoholic irritation, cardiac inability, and ascitic pressure were probably factors all engaged in the production of the congestive nephritis. With rest, abstention from alcohol, cardiac tonics, and the removal of fluid pressure all the disorders dependent solely upon temporary and removeable conditions subsided, the heart contracted, the nephritis ceased,

FIG. 8.



Cardiac cirrhosis. Cirrhosis of the liver due to prolonged venous congestion, the result of tricuspid incompetence. From a boy aged nine years. Explanation of plate:—A, Coarse cirrhosis. B, Fine fibrosis. C, Pseudo-ducts. D, Liver substance. E, Blood.

and the general dropsy disappeared. The condition of the liver, however, depending, not only upon venous engorgement, but upon fibrosis also, could not be so remedied. The cirrhosis remained, and the ascites returned from time to time until the development of vicarious circulation and the increased cardiac vigour eased the portal circulation. That the course of events ran pretty much on these lines is shown, I think, by the immediate and great relief afforded by paracentesis, evidenced by the cessation of dyspnœa, rapid subsidence of œdema of the legs, disappearance of albumin from the urine, and all signs of renal disorder. The dropsy in the last stage was not a general dropsy due to cardiac and renal disease, but an hepatic ascites.

The course of the disease in the preceding case suggests that cardiac inefficiency is sometimes an important agent in determining the occurrence of portal dropsy in cirrhosis. I have now under my care at St. Mary's Hospital a man with extensive mitral disease, secondary tricuspid disease, and an enormously enlarged pulsating liver who has very extensive ascites but hardly any general dropsy.

In speaking of the intercurrent ascites of mitral disease of the heart in the first lecture I suggested that it might be due to the engorged condition of the liver *plus* the moderate cirrhosis which follows on prolonged venous hyperæmia as shown in Fig. 7 and Fig. 8. The addition of systemic obstruction to that of the fibrosis and capillary dilatation, causing greater intra-vascular pressure in the portal veins than in the systemic, determines transudation in the portal area—a portal dropsy only, not a general systemic dropsy. Evidence was adduced from morbid anatomy proving how gravely the muscular structure of the heart is often affected by degenerative changes in cirrhosis. It is, I think, probable that in these cases of hypertrophic affection, when ascites supervenes earlier than the fibrosis of the liver alone seems to warrant, the increased portal stagnation induced by heart dilatation and inefficiency added to the cirrhotic obstruction may be the last straw—the determining factor of peritoneal effusion.

Two other cases which have come under my observation lend support to this view. In 1894 I was asked to see a young fellow, aged 32 years, a man in wealthy circumstances, said to be suffering from Bright's disease, with the statement from his medical attendant in the country that he had been a confirmed and excessive spirit drinker since he was 12 years old. He told me, indeed, himself, with great pride in his own acuteness, that the waiters at the club where he stayed in London had orders to make all his glasses of brandy double ones. When I saw him he was breathless on movement, in great distress from dyspnœa, and had extreme anasarca of the lower half of his body, with marked ascites. The heart was greatly dilated; there were mitral and pulmonary murmurs—moist sounds at the base of both lungs. The liver was greatly enlarged and hard, its edge reaching three fingers' breadth below the ribs in the nipple line. The urine was high-coloured and of specific gravity 1032, loaded with albumin, and contained abundant granular and hyaline epithelial casts. Under absolute rest, digitalis, abstention from alcohol, and the care of a medical man and two nurses he quickly recovered and two months later astonished me by walking briskly into my room expressing himself as well—and looking well. The dropsy had gone and the cardiac murmurs had gone, although there was still evidence of dilatation. The casts had disappeared from the urine, which was of specific gravity 1022, a mere trace of albumin alone remaining. The liver remained enlarged as before. The alcoholic habits were renewed after a time and a year later the liver had enlarged still further and become enormous, reaching half-way to the umbilicus, the heart was larger than normal, with short sound but no murmurs. There was no return of dropsy. The next stage which I anticipated would speedily ensue—viz., ascites—did not follow. The patient died suddenly from syncope a few months later. Here the same series of events followed as in the preceding case with one exception: cardiac degeneration, general dropsy with disproportionate ascites, and progressive fibrosis; the final stage of cirrhotic ascites alone was wanting.

The second case is one which I have already mentioned as an instance of alcoholic enlargement of the liver in a young fellow aged twenty-nine years. He has some dilatation of the heart, palpitation, dyspnœa, considerable enlargement of the liver, but no dropsy. This exhibits the earliest stage of hepatic engorgement and commencing fibrosis. Can there be much doubt that if the exciting cause continues in operation the stages observed in the other more advanced conditions will follow in due course?

If cardiac debility and dilatation play an important part in the production of an early ascites in certain cases of hypertrophic cirrhosis it will help to explain why these cases run a more favourable course than others. It is a condition which can be materially influenced by treatment—a condition capable of great relief if not of cure—and its removal makes more easy and possible the removal of the ascites, which may finally disappear, as it does in the analogous condition of the ascites of mitral dropsy.

There is another point connected with this relation of cardiac inability and hepatic stagnation which deserves consideration. Is it not possible that this may explain, in some degree at all events, not only why in these cases of hypertrophic cirrhosis the liver remains large, but also why the fibrosis affects partly the finer branches of the interstitial tree instead of the large trunks only, as usual in atrophic cirrhosis? The character of the fibrosis is certainly not determined by the nature of the alcoholic stimulant, as has been suggested, according as it is beer or spirits. In three of the four cases related the patients were spirit drinkers; one patient only was a beer drinker. The enlargement, moreover, is not due to fatty deposit. My observations agree with those of Dr. Foxwell[3] that fatty infiltration is no more common in the large than in the small livers. The enlargement is probably due in part to chronic venous engorgement and dilatation of hepatic venules and capillaries such as are found in the nutmeg liver of cardiac cirrhosis. If the specimens of pure cardiac cirrhosis shown in Fig. 7 and Fig. 8 are examined and compared with that of hypertrophic cirrhosis shown in Fig. 1 in the first lecture it will be seen that the two conditions are almost identical. There are the same mixed coarse and fine fibrosis, the same appearance of fresh formation of biliary ducts—the same enlargement. Moreover, it might well be that in alcoholic cirrhosis with early enfeebled heart the effect of the alcoholic poison would be felt where the blood stream is most delayed, as the region of the hepatic vein within the lobule is approached. In this way a fine intralobular fibrosis would be produced there, while this same region would escape in an alcoholic cirrhosis where the heart factor did not come in, and a simple, coarse cirrhosis only with atrophy would in that case result. Be this how it may, however, I believe that cardiac inefficiency, even when not advanced enough to disclose itself by the usual physical signs of heart disease or a general dropsy, is a factor in the causation of the more acute cirrhosis of the enlarged alcoholic liver and of the ascites which may accompany it.

[3] Enlarged Cirrhotic Liver, Birmingham Medical Review, vol. i., 1898.

The Goulstonian Lectures

ON

THE TYPHOID BACILLUS AND TYPHOID FEVER.

Delivered before the Royal College of Physicians of London on March 20th, 22nd, and 27th, 1900,

BY P. HORTON-SMITH, M.A., M.D. CANTAB., F.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO THE BROMPTON HOSPITAL FOR CONSUMPTION AND TO THE METROPOLITAN HOSPITAL; ASSISTANT MEDICAL TUTOR TO ST. BARTHOLOMEW'S HOSPITAL.

LECTURE III.[1]

Delivered on March 27th.

MR. PRESIDENT AND GENTLEMEN,—In my previous lectures I have discussed the various manifestations of disease which the typhoid bacillus is able to evoke. To-day I desire to consider certain of the changes which occur in the blood during and after an attack of typhoid fever and in conclusion to refer to one point in connexion with the treatment of the disease.

The alterations which may be noted in the blood as the result of an attack of typhoid fever, as indeed of any specific infectious disease, are of two kinds. In the first place, we find gross and visible changes—changes, that is to say, relating to the number of the red and white corpuscles and to the amount of the hæmoglobin. Of these I do not propose to treat. In the second place, delicate and invisible changes—alterations which do not force themselves upon our notice but which nevertheless are of the highest importance to the organism in combating the disease, and which manifest themselves by conferring upon the blood bactericidal, lysogenic, agglutinative, and other properties. The most striking of these in typhoid fever, and the one which has most recently become known to us is the agglutinating power, and to it I propose chiefly to confine myself.

THE AGGLUTINATING POWER.

History of its discovery.—As is well known, this property was first demonstrated in the blood of patients suffering from typhoid fever by Widal in June, 1896, and the reaction, used so frequently as a means of diagnosis, has since been known by his name. It would be wrong, however, to suppose that his discovery was in all senses a new one. He, indeed, would be the last to claim it so. The great advance which Widal effected was the application to the bedside, for the diagnosis of disease, of those methods which had been perfected by other observers and notably by Gruber and Durham, but used hitherto exclusively for the identification of micro-organisms. In doing homage, therefore, to the services rendered by Widal we must not forget the work of previous observers, to which as it were he placed the keystone of the arch. The first step in the direction of this great discovery was made in 1889 by Charrin and Roger.[2]

[1] Lectures I. and II. were published in THE LANCET of March 24th and 31st, 1900, respectively.

[2] Charrin and Roger: Comptes Rendus, 1889, p. 710.

These observers, working with bacillus pyocyaneus, the micro-organism of blue pus, showed that if a culture were made in the serum of an animal immunised against the bacillus the growth resulting presented an unusual appearance. Instead of rendering the serum uniformly turbid, as would have been the case had a normal serum been used, the liquid remained quite clear while the growth formed a mass at the bottom of the tube. The bacilli had, in fact, become agglutinated even during their growth, though at this early date the true interpretation of the fact was not appreciated. In 1891 these facts were confirmed by Metchnikoff,[3] who also showed that similar phenomena were manifested under corresponding circumstances by the pneumococcus and the vibrio Metchnikovi. In 1894 Issaeff and Ivanoff[4] extended the law to the vibrio named after the latter.

The culture method, however, had it alone been proceeded with, would never have revealed the true importance of the phenomenon, for tested in this way it is by no means uncommon for the sera of non-immunised animals to produce similar modifications of growth. It was therefore a great step in advance when in 1895 M. Bordet,[5] one of the *Préparateurs* at the Pasteur Institute, showed that the cultivation method was unnecessary and that the agglutination occurred equally well, and indeed immediately, if the serum from an immunised animal be added to the already developed culture. It was not, however, until the following year that the full importance of the reaction became evident, when Mr. H. E. Durham[6] demonstrated that by highly diluting the serum before adding it to the culture its action was restricted to the micro-organism previously used for the immunisation of the animal. It followed, therefore, that the reaction, if properly used, was of the highest importance, for it presented us with one of our most effective means of distinguishing these micro-organisms from their numerous allies. To Gruber and Durham, then, must be given the full credit of first thoroughly appreciating the value of the reaction and working out carefully the conditions under which alone it could be used for bacteriological diagnosis.

The work of these observers had been done with the sera of animals already thoroughly immunised, and though Gruber was prepared to find the agglutinating properties present in the blood *after* an attack of typhoid fever it did not at first occur to him that the blood *during* the attack itself might also show the phenomenon. Here, then, was the opportunity of Widal,[7] who on June 26th, 1896, announced his discovery that even during the disease itself the agglutinative power was present in the blood and that therefore the reaction could be used as a means of *clinical* as opposed to *bacteriological* diagnosis. It should be noticed, however, that Widal's observation was no chance discovery. It was, indeed, directly the result of his earlier work. Four years previously he had shown in conjunction with Chantemesse[8] that the blood of typhoid fever patients even during the attack acquired considerable "preventive power," or, in other words, if injected into a guinea-pig together with an otherwise fatal dose of typhoid bacilli it was often able to prevent the death of the animal. It was natural, therefore, for him to inquire whether the agglutinative power which Gruber regarded as a sign of immunity was not also present during the disease itself. His search was successful and from it directly sprang our present method of serum diagnosis.

Such, then, is the history of this great discovery and it is pleasant to think that the credit of it belongs exclusively to no one country alone, but that it is an honour in which Frenchmen, Germans, and Englishmen may alike claim a share.

TECHNIQUE.

In considering the reaction the technique to be employed is of the first importance, and in this connexion several points have to be considered relating to the dilution of the serum used, the time-limit, and the typhoid culture employed.

The dilution to be used.—As originally proposed by Widal for the "extemporaneous" or microscopical method, which is the one generally in use at the present time and to which the following remarks apply, a dilution of the serum 1.10 was adopted, one drop of the serum being, that is to say, diluted in 10 drops of culture. It was soon seen, however, that this was somewhat too low, a considerable number of cases being recorded in which a positive reaction was obtained although the patients were not suffering from, and had never had, typhoid fever. The dilution has therefore been generally raised, and the only question at issue is the exact dilution which should be decided upon. At present there is no unanimity in this matter. In Paris 1.10 is still in use, at St. Bartholomew's Hospital 1.20 is employed, Fischer (Dantzig) recommends 1.25, Neufeld in Berlin 1.30, Schumacher (Halle) 1.50, while Durham suggests 1.100 or preferably higher. It should be noted that the question is not merely an academic one. If we raise the dilution considerably—to 1.100, for example—we *ipso facto* diminish the value of the test, for some 20 per cent. of cases *never* show a clumping power as marked as this, while others, again, only reach this height late in the disease, when the reaction is as a rule no longer needed. If, on the contrary, we choose too low a dilution we run a risk of error, of diagnosing as typhoid fever cases which are not really so. The problem before us, then, is to choose a dilution which, while reducing error to a minimum, will still enable us to diagnose nearly all cases of the disease. Without pursuing the subject further at this moment it may be said that on the whole a 1.20 *dilution* would seem from a practical point of view to attain these results in the most satisfactory manner.

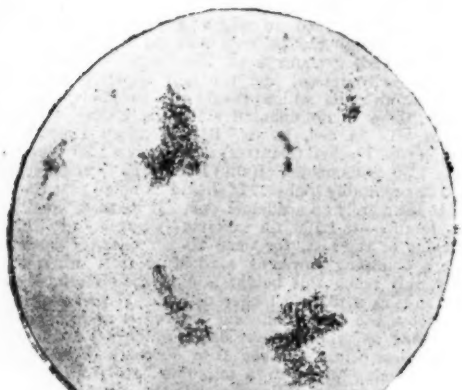
The time-limit.—Another extremely important point, and one which cannot really be separated from the question of dilution, is the time-limit which should be employed. How long in doubtful cases should the serum be allowed to act on the culture before a negative or positive reaction be finally determined upon? Some authorities recommend half an hour, some one hour, some two hours, some four, or even longer. It would seem, however, that without doubt a short time-limit should be employed, one hour, perhaps, being the most suitable. It is, of course, possible that slight delayed reactions may be due to the presence of small amounts of the typhoid agglutinin, but it is equally true that they may also result from the agglutinins of other micro-organisms, such as Gärtner's bacillus enteritidis, which in small amounts would only produce an effect after some considerable time. In any case, then, a long time-limit, in addition to being inconvenient, introduces a source of danger, and therefore a limit of one hour at most may be taken as a working and safe basis.

The typhoid culture.—Lastly, with regard to the typhoid culture used, it is extremely important to select one which is agglutinated readily by appropriate typhoid serum. As I pointed out in my first lecture, if broth cultures are used most marked differences in clumping power between various typhoid bacilli can be demonstrated. The difference seems to be in some way connected with the culture media and does not mark, as a rule, any inherent difference in clumping power between various typhoid stocks, for often an agar culture from the same bacillus will clump admirably in high dilutions with the very serum which produces no effect on the broth culture. Since, however, the latter from their convenience are always now used in performing the reaction it behoves us to select a culture the clumping power of which in this medium is not diminished.

The use of dead bacilli.—It was early shown by Bordet that the reaction was by no means concerned with the life of the bacillus and that dead bacilli might be used equally well. This point was confirmed by Widal and Sicard[9] as regards the typhoid bacillus, and they showed that perhaps formalin was the best reagent for killing the bacillus, while yet leaving its sensibility towards the agglutinating serum absolutely intact. It is easy, if Widal's directions as to the amount of formalin required be followed exactly, to confirm this observation, and it is undoubtedly correct. It might be thought, therefore, that it would be best after having found a typhoid bacillus, the 24 hours' broth cultures of which are very sensitive, to prepare a considerable quantity of such a culture and, after killing the bacilli, preserve it for general use in the laboratory. From a practical point of view, however, it may be said that while dead cultures act admirably if the agglutinating power of the serum be marked they are less satisfactory in doubtful cases, which would be returned merely as "suspicious," for owing to the bacilli being dead

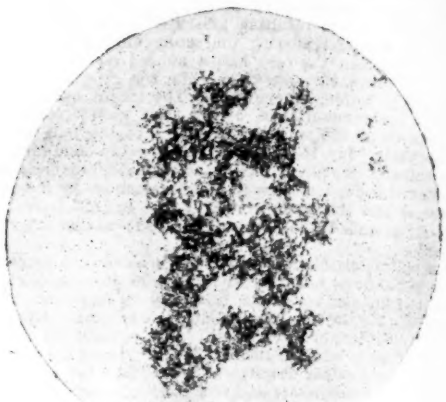
[3] Metchnikoff: Annales de l'Institut Pasteur, 1891, p. 473.
[4] Issaeff and Ivanoff: Zeitschrift für Hygiene, vol. xvii., 1894, p. 122.
[5] Bordet: Annales de l'Institut Pasteur, 1895, p. 496.
[6] Durham: Proceedings of the Royal Society, January, 1896.
[7] Widal: Bulletins et Mémoires de la Société des Hôpitaux de Paris, June 26th, 1896.
[8] Chantemesse and Widal: Annales de l'Institut Pasteur, 1892, p. 768.
[9] Widal and Sicard: Comptes Rendus de la Société de Biologie, Jan. 30th, 1897, p. 116.

FIG. 1.



(a) The typhoid bacillus × 250.

FIG. 2.

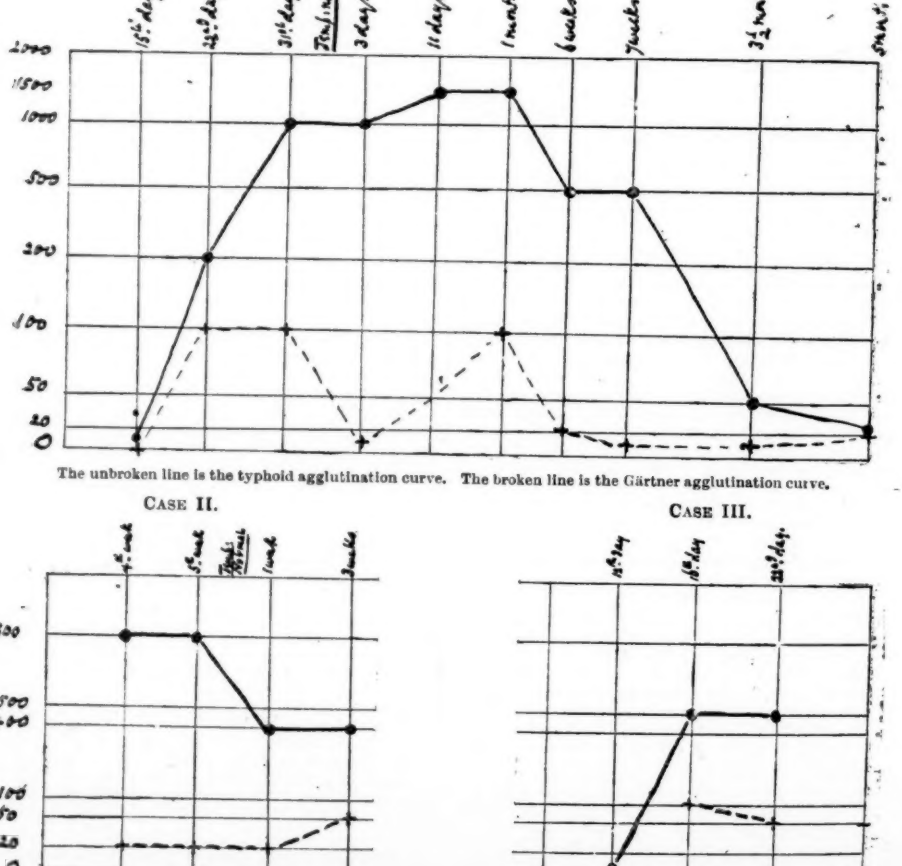


(b) Gärtner's bacillus × 700.

Photographs showing agglutination of the typhoid bacillus and also of Gärtner's bacillus, produced by a 1.20 dilution of the same typhoid serum.

The typhoid bacillus in this case gave a complete reaction up to a dilution of 1.500, while Gärtner's bacillus did not react above 1.100.

CASE I.



The unbroken line is the typhoid agglutination curve. The broken line is the Gärtner agglutination curve.

CASE II.

CASE III.

The unbroken line is the typhoid agglutination curve. The broken line is the Gärtner agglutination curve.
The figures in each case represent the maximum dilution capable of causing complete agglutination of the bacilli within one hour.

Sera charts from three cases of typhoid fever illustrating the independence of the Gärtner and typhoid agglutinating power manifested by the sera in question.

we no longer see those characteristic movements made by the bacilli in their efforts, as it were, to free themselves, which so often attract attention and lead us to examine the blood again a day or two later. The routine use, therefore, of dead cultures would thus seem to be hardly advisable, though for emergency use they are of great value.

What reliance to be placed on the test if performed as suggested.—We may now ask ourselves, what reliance may be placed upon the test if it be performed in the manner suggested, that is to say, *using a very sensitive 18-hour broth culture, a dilution of 1.20, and a time-limit of one hour, a "positive reaction" only being returned, when the clumping is marked and general and when the few bacilli not clumped are rendered motionless?* In the first place it may be stated that tested by experience at St. Bartholomew's Hospital, even though here as a rule a time-limit of two hours has been allowed, this low dilution does not seem to have failed. During the last three years, 1897 to 1899, the reaction has been tested and the result noted on 546 occasions. Of the cases so examined over 200 proved themselves later by their clinical course, verified not uncommonly by post-mortem examination, to be not typhoid, and yet in only a single one of these non-typhoidal cases was a positive reaction obtained. The one exception was a case of great interest. It was that of a woman who while in the hospital had symptoms resembling those of typhoid fever. The Widal reaction was returned as "just positive." At her death, however, a few days later the case proved to be one of septicæmia. No typhoid lesions were found at all nor was the typhoid bacillus found in her spleen. This organ, however, contained the staphylococcus pyogenes aureus in enormous quantities. It seemed at first sight as though the reaction was here at fault. Inquiries, however, were made by Dr. Drysdale and it was found that four months before her death the patient had been treated at home for typhoid fever. An easy explanation was thus afforded for the presence of the agglutinating reaction during her stay in the hospital.

Objections urged to a low dilution.—So far, then, these facts would show that a 1.20 dilution, with a time-limit of one hour, is one which may be relied upon. In January, 1898, however, it was shown by Mr. H. E. Durham[10] in a very interesting paper that the serum of typhoid fever patients not uncommonly reacted strongly to the bacillus enteritidis (Gärtner) as well as to the typhoid bacillus, producing admirable clumping in both cases up to a dilution of 1.100. In higher dilutions, however, bacillus enteritidis as a rule no longer reacted, while the typhoid bacillus in general did. The two accompanying photographs (Fig. 1 and Fig. 2) illustrate this clearly. An inference which has been very commonly drawn from these facts is that in performing Widal's reaction a dilution over 1.100 should always be used, since with any lower dilution it would be impossible to be certain in any case that the agglutination of the typhoid bacillus was due to the presence of the typhoid agglutinins and not to those of Gärtner's bacillus only.

The agglutinins of bacillus enteritidis present in the blood in many cases of typhoid fever.—Of the presence of the Gärtner agglutinins in the blood in many, though by no means all, cases of typhoid fever there cannot be any doubt. The following observations made in the early part of 1898 show this clearly. In the first place, if Gärtner's bacillus were clumped only by the typhoid agglutinins present in the blood, the degree of agglutination manifested by the former should vary directly with the amount of agglutination shown by the typhoid bacillus—that is to say, whenever the typhoid bacillus is clumped in a high degree by a given serum, then the maximum dilution capable of clumping Gärtner's bacillus should rise also, though, of course, always remaining far below that of the former. Similarly the reverse should obtain with a weak typhoid serum. The two curves should, in fact, follow each other closely, though of course at a considerable distance. This, however, is not the case. The typhoid bacillus may with a given serum be clumped in a high dilution and the bacillus enteritidis only in a low dilution, while with another serum the typhoid clumping power may be less marked and that of bacillus enteritidis more marked, facts brought out clearly by the three accompanying sera charts (Case I., Case II., and Case III.). Moreover, if cases are followed into convalescence it is not an uncommon occurrence to note that after a time the serum ceases to clump the typhoid bacillus, while continuing to agglutinate Gärtner's bacillus. The two curves, in fact, become transposed, as the sera charts from Case IV. and Case V. show, a condition of affairs which it is impossible to explain upon any other hypothesis except that of a double infection. It should be noticed, also, that the secondary infection in cases of typhoid fever is not limited to the bacillus enteritidis. Thus Lorrain Smith,[11] from observations made during the Belfast epidemic, showed that often evidence of infection by other varieties of bacillus coli could be obtained. The importance of these facts in connexion with the etiology of the disease, and especially their relation to relapses, has already been dwelt upon.

It may be accepted, then, that in many cases of typhoid fever Gärtner- as well as typhoid-agglutinins are both present in the blood. But is this any reason against using a 1.20 dilution in performing the test as has been urged? It would seem not, for, as the following experiment shows, the serum of an animal artificially immunised against Gärtner's bacillus does not completely clump the typhoid bacillus in a 1.20 dilution (microscopical method, time-limit one hour) until the serum is capable of agglutinating Gärtner's bacillus itself, at least in a dilution of 1.1000. Now such a condition of affairs rarely if ever occurs in human typhoid fever or in cases resembling it clinically. If, then, the serum of a case which suggests typhoid fever produces complete clumping of the typhoid bacillus within one hour in a dilution of 1.20 then only in the rarest cases can this be due to the presence of Gärtner and not true typhoid agglutinins.

Experiment.—A guinea-pig was immunised against bacillus enteritidis and its serum was tested as regards its clumping power from time to time against both this bacillus and against the typhoid bacillus. The following results were obtained:—

Table showing the Agglutinating Effect upon the Typhoid Bacillus of Gärtner Sera of Varying Strengths.

—	*v.* Gärtner's bacillus.	*v.* Typhoid bacillus.
a. June 28th, 1898, after three injections.	1.20 = + 1.100 = + 1.200 = 0	1.20 = 0
b. July 14th, after four injections.	1.200 = + 1.500 = + 1.1000 = trace. 1.2000 = 0 1.5000 = 0 1.10,000 = 0	1.20 = faint trace.
c. Dec. 22nd, after five injections.	1.20 = + 1.200 = + 1.1000 = + 1.2000 = partial reaction.	1.20 = + (just). 1.100 = 0 1.200 = 0

\+ equals a complete reaction within one hour.

So far, then, as typhoid fever is concerned it would seem that the objections raised on the above grounds against the routine use of a 1.20 dilution, with a time-limit of one hour, are more theoretical than real—a conclusion which is supported by the results of the numerous serum observations made at St. Bartholomew's Hospital to which I have already alluded.

Rare cases in which the reaction is at fault.—It should be noticed, however, that a positive reaction obtained with a 1.20, or even a 1.40 or 1.50 dilution and a one-hour time-limit is not an absolute proof that the patient is suffering from typhoid fever. A certain number of cases have undoubtedly been recorded in which such reactions have been obtained in cases which afterwards proved themselves to be not typhoid fever. They are, however, rare, and not a few of them may have been possibly due to anterior attacks of typhoid fever, or in the earlier days to faulty technique, too long a time-limit, for example, having been allowed. Including all, however, Bensaude[12] in 1897 was only able to collect seven in which in apparently non-typhoidal cases the reaction was stated to be given in a dilution of 1.20, which, considering the thousands of cases examined, is a very small percentage of error, even if we accept them all as authentic. Since then a few other cases have been reported but they remain rare. With a dilution of 1.40, again, the reaction has proved at fault. Thus Van

[10] Durham: THE LANCET, Jan. 15th, 1898, p. 154.

[11] Lorrain Smith: Brit. Med. Jour., Jan. 28th, 1899.

[12] Bensaude: Thèse de Paris, p. 90.

Oordt[13] reported the case of a man, 50 years of age, who had never had typhoid fever but whose blood reacted positively in dilutions of 1.30 and 1.40 both macroscopically and microscopically (the exact time-limit, however, is not mentioned). At the post-mortem examination the case proved to be not one of typhoid fever but of malignant endocarditis produced by the pneumococcus. Cultivation proved the absence of the typhoid bacillus. Again, using a dilution of 1.50 Kasel and Mann[14] have twice obtained the reaction in cases of pneumonia, and in both cases the reaction was "strongly positive" well within an hour. In neither case could the reaction be ascribed to a former attack of typhoid fever. How the reaction is produced in these cases is doubtful. But the fact that not uncommonly such abnormal reactions are very evanescent, being present one day and gone the next, suggests that we are really dealing with some chemical substance which happens to be temporarily present in the blood. Certain bodies, such as safranin and vesuvin, possess, as Malvoz[15] has shown, a remarkable capacity for agglutinating the typhoid bacillus, and it may be that some analogous body is in these cases present in the blood.

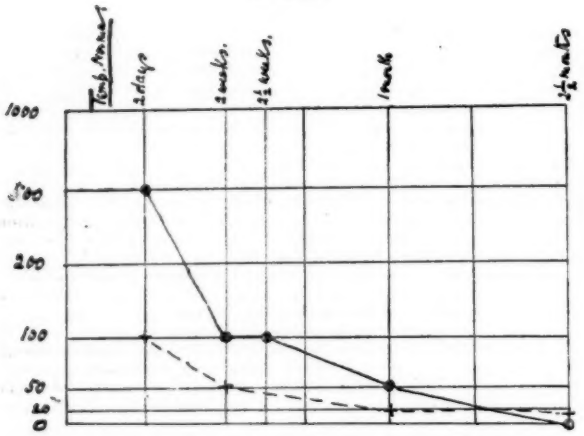
As yet, so far as I know, no case without a history of former typhoid fever has been recorded in which with a higher dilution than 1.50 the reaction has been positive, and yet the typhoid bacillus has been proved absent by a bacteriological examination. If, then, we sum up the considerations which have been brought forward it would seem that the following conclusion is justified.

Conclusion.—For all practical purposes a *1.20 dilution with a short time-limit* (*one hour*) gives admirable results. A positive reaction so obtained has a diagnostic value about equal to that of the eruption—that is to say, that in very rare cases both may be observed in cases which are not typhoid fever. If, however, in any given case we require from the test absolute infallibility then we must use in addition greater dilutions, such as 1.100 (or even higher), employing of course the same time-limit as before—namely, one hour. But to use such dilutions as a matter of routine would be an error, since we should thereby wilfully diminish the value of the test by excluding many cases of typhoid fever (nearly 20 per cent.) which never reach even the 1.100 limit during any part of their course.

Proportion of cases in which the reaction occurs.—Supposing, then, the test be applied in this way, in what proportion of cases may we expect a positive result? Dr. J. H. Churchill, in a paper in the St. Bartholomew's Hospital Reports for 1898, analysed the cases which he had observed in the hospital during that year. He found that out of 71 cases 69 gave a positive reaction at some period of their course, giving a total percentage of 97.1. It is noticeable, also, that Widal's cases in which the blood was examined quantitatively gave an almost exactly similar result. Out of 34 cases examined 33 of them reacted positively to a dilution of 1.20, making a total percentage of 97·0. It is probable, therefore, that these numbers represent fairly accurately the true state of the case and show that in 97 per cent. of all typhoid fever cases the reaction can be obtained in a dilution of 1.20 at some period of the disease. If, however, a 1.100 dilution be used as a routine then the percentage falls very greatly. Widal's cases show that under these circumstances out of every 100 cases 17 would never show the reaction, while Lorrain Smith's cases would place the percentage of negative results even higher.

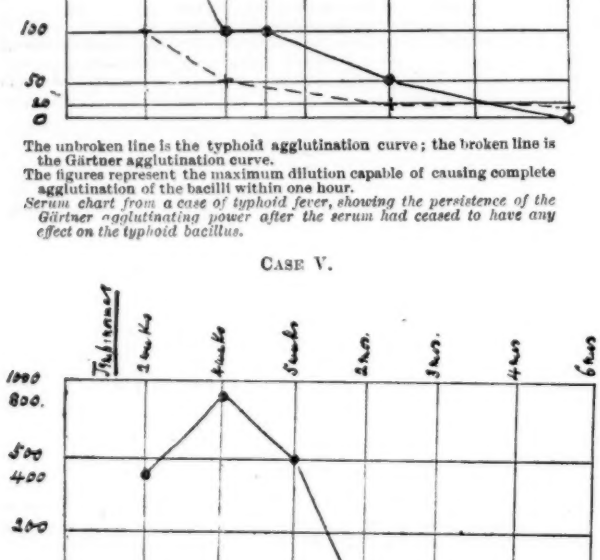
Date of appearance of reaction.—At what date the reaction first appears is a matter very difficult to settle owing to the insidious onset of the disease. Dr. Churchill was, however, able to analyse 40 of the positive cases at St. Bartholomew's Hospital in which the commencement of the illness could be fixed, and he found that the average date of the first appearance was not later than the thirteenth day, though nine of the 40 cases gave a positive reaction between the fifth and eighth days. We may say, then, that while the reaction may occur before the end of the first week, this is unusual. It is more common for it to make its first appearance during the second week, but not rarely it may be delayed until the third or fourth week or even beyond this period.

CASE IV.



The unbroken line is the typhoid agglutination curve; the broken line is the Gärtner agglutination curve.
The figures represent the maximum dilution capable of causing complete agglutination of the bacilli within one hour.
Serum chart from a case of typhoid fever, showing the persistence of the Gärtner agglutinating power after the serum had ceased to have any effect on the typhoid bacillus.

CASE V.



The unbroken line is the typhoid agglutination curve; the broken line is the Gärtner agglutination curve.
The figures represent the maximum dilution capable of causing complete agglutination of the bacilli within one hour.
Serum chart from a case of typhoid fever, showing the persistence of the Gärtner agglutinating power after the serum had ceased to have any effect on the typhoid bacillus.

[13] Van Oordt: Münchener Medicinische Wochenschrift, 1897, No. 13, p. 327.

[14] Kasel and Mann: Ibid., 1899, No. 18, p. 581.

[15] Malvoz: Annales de l Institut Pasteur, 1897, p. 585.

Complete absence of the reaction throughout the disease.—It has been stated that the reaction is not to be obtained in roughly 3 per cent. of all typhoid fever cases. Possibly even this number may be too high, for conceivably some of the negative cases may not have been really typhoid fever. There is no doubt, however, that cases proved bacteriologically to be typhoid fever do exist, in which throughout the whole course of the disease no reaction can be obtained. A case of this kind was recorded by Widal in 1897[16] in which the reaction totally failed though the patient had typhoid fever followed by a relapse and in which puncture of the spleen demonstrated the presence of typhoid bacilli in this organ on two occasions. Similar cases have also since been published by Fischer[17] and Schumacher.[18] Carefully tested cases are, however, very rare and from a theoretical point of view are so important and interesting that the following cases may be shortly mentioned.

CASE 1 (Rahere Ward; Sir T. Lauder Brunton).—The patient, a male, aged 18 years, was admitted with typhoid fever. He died on the seventeenth day with perforation and general peritonitis. The serum was tested in a 1.20 dilution on the eleventh and fifteenth days by Dr. Drysdale, but with a negative result. The heart's blood obtained post mortem two days later showed only a partial and incomplete reaction. At the necropsy the lesions of typhoid fever were found and the spleen and mesenteric glands contained a pure culture of typhoid bacilli, which themselves were agglutinated strongly by suitable typhoid serum. It may be argued, however, that this was merely a case of delayed appearance of the reaction. Such an objection, however, is not applicable to the next case.

CASE 2 (Mark Ward; Dr. Church).—The patient was a male, aged 16 years. His illness began on Jan. 4th, 1898. On Jan. 12th he was admitted into the hospital with typhoid fever. The attack was prolonged, the temperature reaching normal on the thirty-fourth day. A mild attack of phlebitis, possibly combined with a relapse, followed, after which the patient made a complete recovery. Spots were never present, but in every other respect clinically the case was a typical one of typhoid fever. On the seventeenth day typhoid bacilli were found in the stools; they reacted positively to all the morphological and cultural tests and on being tested against the serum of a highly immunised guinea-pig they gave a complete and immediate reaction in a dilution of 1.1000. The serum reaction was performed (dilution 1.20, time-limit one hour) on the 18th and 19th, the fourteenth and fifteenth days respectively, with a negative result. On the twenty-fifth day (Jan. 29th) an incomplete reaction was obtained at the end of an hour, and in this case the preparation was again examined several hours later, but showed no further change. On Feb. 21st, during the second access of fever, the reaction was again negative and on March 16th and 30th, when the temperature had been normal for 16 and 30 days respectively, similar results were obtained. In this case, then, though tested on six occasions at periods of the disease when the reaction is usually marked, on five it was found to be completely absent to a dilution of 1.20, while on the sixth occasion, though there was some clumping, the reaction could only be called indefinite. There can be no doubt, then, that in some cases proved bacteriologically to be typhoid fever it may be quite impossible ever to obtain a positive reaction, even though numerous attempts be made and at suitable periods of the disease.

Duration of reaction.—Another point of great importance to consider in connexion with the serum reaction is the length of time during which it may persist after the patient's recovery. In other words, how soon may we expect the reaction to disappear after an attack of typhoid fever? A certain number of observations have been made at varying intervals on suitable patients and the results have been sometimes negative and sometimes positive, the latter sometimes at very long intervals, many years after the primary attack. Such isolated observations, however, are always open to criticism. The only way, indeed, of settling the question how long the reaction may last is to follow a series of cases month by month until the final disappearance of the clumping power be noticed. The following cases were examined in this way. The numbers represent the highest dilution in which a complete reaction could be obtained, while the zero means that in a dilution of 1.20 no agglutination was observed. The time-limit in all cases was one hour.

TABLE VIII.

CASE 1.—*A male, aged 16 years.*

14th day	0
15th ,, ...	0
25th ,, partial reaction	(1.20)
48th ,, ...	0
After the fever.	
18 days	0
1 month	0
6½ months	0

Result.—Reaction never observed.

CASE 2.—*A female, aged 18 years.*

15th day	1.20
25th ,, ... slight trace	(1.20)
After the fever.	
5 days	0
14 ,, ...	0
1 month	0
2½ months	0
3½ ,, ...	0

Result.—Reaction never observed after defervescence.

CASE 3.—*A female, aged 17 years.*

9th day	1.50
After the fever.	
1½ months ... ... trace	(1.20)
3 ,, ... trace	(1.20)
4 ,, ...	0

Result.—Reaction disappeared within one and a half months.

CASE 4.—*A male, aged 20 years.*

After the attack.	
1 day	1.500
14 days	1.100
1 month	1.50
2½ months	0

Result.—Reaction disappeared within two and a half months.

CASE 5.—*A male, aged nine years.*

After the fever.	
3 weeks...	1.50
(Had scarlet fever.)	
5 months	0
6 ,, ...	0

Result.—Reaction disappeared within five months.

CASE 6.—*A male, aged 52 years.*

Beginning of relapse ...	1.100
After the fever.	
10 days	1.300
4 weeks...	1.500
5 ,, ...	1.400
2 months	1.100
3 ,, ...	1.20
4½ ,, ... partial	(1.20)
6 ,, ... trace	(1.20)
7½ ,, ...	0

Result.—Reaction disappeared within five months.

CASE 7.—*A male, aged 42 years.*

During the relapse	(1.20)*
After the fever.	
10 days	(1.20)*
3 months	1.50
3½ ,, ...	1.40
4½ ,, ... partial	(1.20)
5½ ,, ...	0
6½ ,, ...	0

Result.—Reaction disappeared within five months.

CASE 8.—*A male, aged 14 years.*

10th day	1.400
17th ,, ...	1.300
24th ,, ...	1.100
After the fever.	
2 days	1.50
15 ,, ...	1.300

CASE 8—(*continued*).

28 ,, ...	1.300
3 months	1.50
5 ,, ...	1.30
6½ ,, ...	1.20
8 ,, ... trace	(1.20)

Result.—Reaction disappeared within eight months.

CASE 9.—*A male, aged 18 years.*

After the fever.	
2 days	(1.20)*
2½ months	1.50
4 ,, ...	1.20
5 ,, ...	1.50
6½ ,, ...	1.20
8 months ... ... partial	(1.20)
9½ ,, ...	0

Result.—Reaction disappeared within nine months.

CASE 10.—*A male, aged 26 years.*

After the fever.	
1 month	(1.20)*
8 months	(1.20)*
10 ,, ...	0
1 year	0

Result.—Reaction disappeared within 10 months.

CASE 11.—*A male, aged 22 years.*

9th day...	1.400
12th ,, ...	1.300
19th ,, ...	1.100
1st day after the attack ...	1.50
8th ,, ,, ...	1.40
4th day of relapse	1.150
After the fever.	
2 days	1.400
9 ,, ...	1.400
17 days	1.150
5 weeks	1.100
3 months	1.300
4 ,, ...	1.150
5 ,, ...	1.80
6½ ,, ...	1.80
9 ,, ...	1.50
11½ ,, ... partial	(1.20)
1 year and 2 months...trace	(1.20)

Result.—Reaction disappeared within a year.

CASE 12.—*A male, aged 15 years.*

During the attack	(1.20)*
Temperature down 9 days	1.80
A relapse followed.	
After the fever.	
5 days	1.400
11 ,, ...	1.500
3½ weeks	1.1000
5 ,, ...	1.1000
7 ,, ...	1.800
2 months	1.300
4 ,, ...	1.200
6 ,, ...	1.150
7½ ,, ...	1.100
9 ,, ...	1.80
11½ ,, ...	1.20
1 year and 1 month...partial	(1.20)

Result.—Reaction disappeared within 1 year and 1 month.

CASE 13.—*A male, aged 26 years.*

During the fever	(1.20)*
After the fever.	
12 days	1.20
1 month	1.100
6 weeks	1.300
3 months	1.800
5 ,, ...	1.500
7½ ,, ...	1.80
9 ,, ...	1.80
1 year	1.80

[16] Widal: Annales de l'Institut Pasteur, 1897, p. 424.
[17] Fischer: Zeitschrift für Hygiene, 1899, xxxii., p. 421.
[18] Schumacher: Ibid., 1899, xxx., p. 364.

TABLE VIII.—(*continued*).

CASE 13—(*continued*).

1 year 2 months	1.80
1 ,, 4 ,, ...	1.30
1 ,, 6 ,, ...	1.30

Result.—Reaction still present after 1 year and 6 months.

CASE 14.—*A male, aged 16 years.*

15th day	partial (1.20)
22nd ,, ...	1.200
31st ,, ...	1.1000
After the fever.	
3 days	1.1000
11 ,, ...	1.1500
1 month	1.1500
6 weeks...	1.500
7 ,, ...	1.500

CASE 14—(*continued*).

3½ months	1.50
5 ,, ...	1.30
6½ ,, ...	1.30
8 ,, ...	1.40
10 ,, ...	1.40
1 year	1.100
1 year 1 month	1.80
1 year 2½ months	1.150
1 ,, 4 ,, ...	1.80
1 ,, 5 ,, ...	1.80
1 ,, 7 ,, ...	1.40
1 ,, 9½ ,, ...	1.20
2 years	1.20

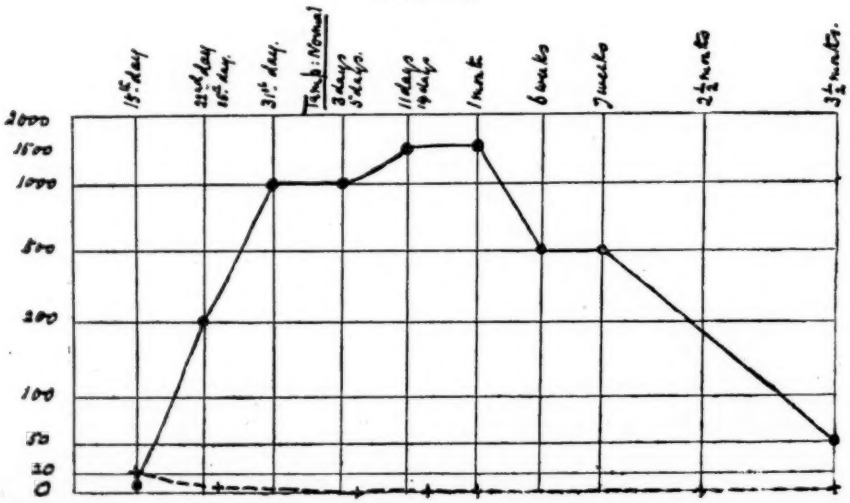
Result.—Reaction still present at the end of two years.

* Higher dilutions not examined.

From these results it will be seen that while in the majority of the cases (12 out of 14) the reaction had disappeared by the end of a year, yet in two cases it was still present after one year and six months and two years respectively. Further, the individual cases themselves show the most marked variations in the persistence of the reaction. Thus, of the 14 cases examined in two it was never obtained after defervescence, in five others it disappeared within six months, in four more within one year, while in two it was still present at periods of one year and six months and of two years after the attack. How are we to explain these extraordinary differences? In great part, doubtless, owing to the fact that the cells of each individual organism react in a different manner to a given stimulus. We shall see that in all probability the agglutinins are produced directly by the body cells, and just as in different animals of the same species, after an injection of an equal quantity of virus, the amount of agglutinin present in the blood at the end of a given time is by no means equal, so it is not difficult to believe that the length of time during which the formation of agglutinins may continue will also vary much. But may there not be sometimes also another explanation? May not the long duration of the reaction be connected in some cases with the persistence in the body of the bacilli themselves, which, as we have seen, is by no means uncommon. Without doubt this is the explanation in some cases, but it is doubtful as yet how far the mere persistence of the reaction proves the point. At all events it has recently been shown that after typhoid inoculations in man, the dead bacilli only having been injected, the reaction may still be present for at least two years. Further continuous observations on inoculated cases are, however, much wanted. In any case in the light of these facts there would seem to be no reason at all to doubt that in certain cases the reaction may still be present even years after the attack, as in a case observed by Widal[19] in which after 26 years it was still present in a dilution of 1.30.

Serum prognosis.—It has been suggested by some observers that it is possible to base our prognosis in a case of typhoid fever on the serum reaction—to use the reaction, in fact, both as a means of prognosis as well as of diagnosis. This opinion naturally suggested itself at once to those who regarded its presence as a proof of immunity and of this school M. Courmont[20] has especially investigated the matter. In a lengthy treatise devoted to this subject he comes to the conclusion that if observations be taken frequently enough during the course of the fever, so that an agglutinating chart comparable to a temperature chart be made, then the reaction may give valuable indications for prognosis. It is evident, however, that, even if thought desirable, such a practice would be very difficult to carry out as a matter of routine in our best-appointed hospitals, while in private practice it would be even less feasible. Moreover, a careful perusal of Courmont's work itself cannot leave one very sceptical as to the truth of his propositions. Certainly, too, so far as my own observations extend, I have seen nothing which lends support to his views. The two following cases, indeed, seem to demonstrate clearly that if we were to rely much in giving a prognosis on the amount of the agglutinating power acquired by the serum we should not uncommonly go astray. The two cases are of interest because the patients were both of the same age (16 years), and both were in-patients of St. Bartholomew's Hospital at the same time suffering from typhoid fever. Their cases could therefore be well compared. Clinically the two cases were almost exactly similar. In both the attack was long continued, lasting in the one case 35 days and in the other 31 days. In both there was also an absence of delirium and the so-called "typhoid state" and in both there was constipation. In neither case was the attack followed by a relapse, but on the contrary uninterrupted recovery took place. The cases, then, clinically were exactly similar, but, as the reproductions show, the most marked differences were exhibited by the sera charts, for while in the one case the reaction reached a height of 1.1500 in the other it was never present in dilutions greater than 1.20, and was for the most part totally absent.

DIAGRAM 6.



The figures in each case represent the maximum dilution capable of causing complete agglutination of the typhoid bacilli within one hour.
The markedly different sera charts from two cases of typhoid fever which were clinically almost identical, illustrating the very slight prognostic value which can be placed on the reaction.

[19] Widal: Annales de l'Institut Pasteur, 1897, p. 424.
[20] Courmont: Thèse de Lyon, 1897.

It is evident, then, that a very weak serum reaction even in a severe case is no bar to a complete recovery and should not therefore indicate a bad prognosis. Again, it has been thought that a low serum reaction at the end of the attack may suggest the probability of a relapse. None, however, occurred in the case which has just been quoted, in which the reaction was absent at this period of the disease. Also if the reaction in Cases 8 and 11 (Table VIII.) be compared it will be seen that while in both cases immediately after the attack the reaction fell to 1.50, in the latter only a relapse followed, the former proceeding at once to recovery. The only conclusion, then, which can be drawn from these facts is that no certain prognosis should be based on the intensity or the reverse of the serum reaction, and that consequently quantitative measurements, except for diagnostic purposes, are of but little value.

THE ORIGIN AND NATURE OF THE AGGLUTINATING SUBSTANCE.

We have thus far studied the agglutinating reaction from the practical point of view. Let us now turn and examine it from its theoretical aspect and consider what is the nature and the mode of origin of the agglutinating substance, and, finally, what is the meaning of the reaction. On some of these points it is impossible as yet to speak with certainty though our knowledge is steadily widening.

The agglutinin a ferment.—In the first place, as to the nature of the agglutinating substance. The evidence as yet available points strongly to the conclusion that we are here dealing with a body of the nature of an enzyme or ferment. Thus minute quantities are often sufficient to produce their effect over enormous quantities of culture. Mr. Durham, for example, was able to prepare a serum which reacted in dilutions of 1 2,000,000, or, in other words, one drop of the serum was sufficient to agglutinate over 100 litres of culture. The fact that such sera are not commonly met with would simply mean that the amount of ferment present is, as a rule, really infinitesimal. Moreover, the chemical reactions of the agglutinin associate it strongly with the ferment group of bodies. Thus the typhoid agglutinin is, like all the enzymes, extremely sensitive to the action of heat. Raising the solution to the boiling point immediately and totally destroys its action, while more prolonged exposure to temperatures higher than 65° C. produces a similar though more gradual result. Evaporation to dryness also leaves the agglutinating power intact. Again, like all enzymes, the typhoid agglutinins are completely precipitated by alcohol in excess. Ammonium sulphate also in saturation possesses a similar power, precipitating the agglutinins completely (Winterberg[21]), just as Kühne and others have shown to be the case with the majority of soluble ferments. So, too, as regards their behaviour towards dialysis, a similarity exists, for just as the enzymes are incapable of passing through the membrane so, too, is the typhoid agglutinin. For these reasons, then, it seems most probable that the typhoid agglutinin is really of the nature of a ferment—a view, moreover, which agrees well with the fact that neither putrefaction nor the prolonged action of digestive ferments, such as pepsin and trypsin, has upon it any effect.

METHOD OF FORMATION OF THE AGGLUTININS.

The next question which presents itself is this, How is the ferment produced?

The view which originally suggested itself, and which probably is indeed the correct one, is that the agglutinins are secreted by the body cells, much in the same way as are the antitoxines, both bodies being produced under the stimulus afforded by the invading micro-organism. It should be noted, however, that recently a totally different theory has been put forward, according to which the agglutinins are a direct secretion of the bacilli themselves, the body cells taking absolutely no share in their formation.

The evidence upon which this view is based is interesting. In the first place it is a well-known fact, as Emmerich and Löw[22] remind us, that a certain agglutination of micro-organisms does take place naturally in the cultures of not a few microbes after a certain lapse of time. In a feeble degree it is not uncommonly present even in 24-hour-old cultures, hence the necessity of examining the culture itself in performing a Widal reaction, but it becomes much more marked at a later period. Thus, for example, if a typhoid broth culture be examined at the end of three or four weeks it will be noticed that the majority of the bacilli have sunk to the bottom and that if the culture be now shaken the micro-organisms do not re-distribute themselves through the fluid but remain stuck together in large ropy masses. It might be thought that this was possibly due to the bacilli having remained so long in contact that their flagella had become entangled, but this is not so, for if a broth culture 24 hours old be taken and the bacilli be killed by the addition of four drops of formalin the culture may be kept for weeks and months and yet whenever shaken the bacilli show no tendency to cohere but are at once redistributed through the fluid and we have the appearance of a normal broth culture. The seeming agglutination can then only be due to the fact that during their growth the bacilli have been acted upon by some body which they themselves have produced and which has so altered them that they now cohere together. But are we justified in assuming that the active body in this case is really the specific agglutinin? According to M. Malvoz[23] we are, but his experiments, confined only to anthrax, are very inconclusive, and it would seem more probable that this pseudo-agglutination is rather the result of the action on the bacilli themselves of the digestive ferment which they normally secrete, and which as their vitality diminishes gradually alters and destroys them.

Another point relied upon by the supporters of the theory is that the effect of repeated bleedings on the agglutinins is said to be different from that noticed in the case of the antitoxines. As is well known, an animal whose serum has been rendered strongly antitoxic by repeated injections may be bled repeatedly in small doses to such an extent that in a short time an amount of blood equal to the total quantity in the body may be removed. If a few days later the antitoxic power of the new blood formed to take the place of the old be examined it will be found to be appreciably the same as that of the original blood, even though no further injection of toxine has been made. This fact was demonstrated first by Roux and Vaillard[24] in the case of the tetanus antitoxine, and recently Salomonsen and Madsen[25] have confirmed it for the antitoxine of diphtheria. It can only point to fresh formation of the antitoxine from the cells of the body. Gengou,[26] however, has recently stated that as regards anthrax at least the facts are different in the case of the agglutinins, and that if an animal be bled the agglutinating power falls very rapidly and does *not* rise again. His statement is, however, based on very slender evidence and it is obvious that in a matter of such importance no such dictum could be accepted unless most fully proved.

At the present moment, then, it may be said that the positive evidence in favour of the view that the agglutinins are direct secretions of the bacilli, the organism merely playing a passive rôle during their formation, is insufficient. Moreover, various strong objections may be brought against it. In the first place, if the agglutinins are formed directly by the typhoid bacilli how can cases of typhoid fever occur in which the reaction is never present throughout the whole course of the disease? It may be argued that in these cases the agglutinin is excreted as fast as it is formed. But this explanation seems hardly sufficient when we remember that the urine, as indeed also the bile, very often shows no clumping power at all and never contains more than traces of the agglutinin even when the blood is very active. Thus in a patient at St. Bartholomew's Hospital whose blood reacted in a dilution of 1.2000 the urine showed no agglutinating power even when equal quantities were added to the typhoid culture. In another case, too, in which the blood gave a complete reaction in a 1 5000 dilution (and a trace in 1.10000) the urine agglutinated in a dilution of 1.10 but not higher. If, then, in these favourable cases the agglutinins are only excreted to so slight an extent it is difficult to believe that there are others in which the cells of the kidney excrete at once every trace of the agglutinin as soon as it makes its appearance in the blood. The occurrence then of cases of typhoid fever in which the agglutinating reaction remains totally absent constitutes a most serious objection to this theory of the formation of the agglutinins.

Again, certain facts in connexion with the agglutinating

[21] Winterberg: Zeitschrift für Hygiene, 1899, xxxii., p. 375.
[22] Emmerich and Löw: Zeitschrift für Hygiene, 1899, xxxi., p. 1.
[23] Malvoz: Annales de l'Institut Pasteur, 1899, p. 630.
[24] Roux and Vaillard: Annales de l'Institut Pasteur, 1893, p. 82.
[25] Salomonsen and Madsen: Ibid., 1898, p. 763.
[26] Gengou: Ibid., 1899, p. 642.

reaction itself are extremely difficult to explain on this view. For instance, it is not uncommon to find that the agglutinating reaction reaches its maximum at some considerable time after the patient is convalescent. Perhaps the best example of this is given in Case 13 (Table VIII.). In this case 12 days after the temperature had reached normal for good the maximum agglutinating reaction was obtained with a 1.20 dilution. The agglutinating power then gradually rose until three months later it had reached 1.800, after which it again began to fall. Such a fact, which is not an isolated one, can hardly be explained except by believing that the agglutinins are secretions of the body cells. For if at a time when the micro-organisms can only have been still present in very small numbers (twelfth day of convalescence) the reaction only reached a height of 1.20, how could it later have reached a maximum dilution of 1.800 through the agency of the bacilli, since the latter, even if still present at this advanced stage, could not have increased in number? Lately, too, Foulerton[27] has shown that after preventive typhoid inoculations, dead cultures only being used, the agglutinating reaction may still be present in some cases for as long as two years afterwards. It is very difficult to believe that if the reaction depended on a ferment present in the liquid and directly injected at the time of the inoculation it could remain present in the body for so long a period of time, since on this view no fresh formation could take place. How, too, can we explain on this theory the fact that certain normal sera manifest sometimes a low degree of clumping power towards the typhoid bacillus? It may, of course, be assumed that such "normal" agglutinating capacity is not brought about by means of the true specific agglutinins and that bodies, perhaps analogous to safranin and vesuvin, which even in very dilute solutions can agglutinate the typhoid bacillus (Malvoz[28]) just as chrysoidin acts on the cholera vibrio (Blackstein[29]), may be present in the blood in these cases. But of this we have no evidence and the fact that the normal serum of the horse can always agglutinate both the cholera vibrio and also the typhoid bacillus and that, as Bordet[30] shows, the bodies acting on the two micro-organisms in this case are separate, distinct, and seemingly specific, points very strongly to the view that even in normal sera we are dealing with the presence of traces of the true agglutinins and that therefore they can only be formed by the body cells.

The evidence, then, at present in our possession points strongly to the view that *the agglutinins are ferments not directly secreted by the bacilli themselves but produced by the cells of the body and especially those of the spleen, the lymph glands, and the bone marrow* (Deutsch)[31] *under the influence of the stimulus produced by the invading micro-organism.*

THE MECHANISM OF AGGLUTINATION.

Concerning the mode of action of the agglutinins—the mechanism of agglutination, in fact—we have yet much to learn. According to the view which was first put forward, the agglutinins were thought to cause the outside sheath of the bacillus to swell up and become viscoid, so that whenever the bacilli in their movements touched each other they at once cohered. This is, however, inadequate. Without doubt the bacilli are altered in some slight degree by the action of the agglutinins, though whether in the manner imagined by Gruber may well be doubted, for no swelling of the sheath can be demonstrated even by patient search in the case of the typhoid bacillus, while Roger's experiments on oïdium albicans, on which alone the theory rests experimentally, are open to criticism, since his serum in all probability contained lysines as well as agglutinins. But the mere fact that dead bacilli can be agglutinated as easily as living ones shows clearly that the clumping of the bacilli does not depend *fundamentally* on any increased adhesiveness of the sheath (even if this be present), but must be brought about rather by variations in the intermolecular forces, which result from the delicate alterations produced in the bacilli by the action of the agglutinins.

THE RELATION OF AGGLUTININS TO LYSINES AND THE CONNEXION OF THE FORMER WITH IMMUNITY.

Let us now consider what is the meaning of the reaction. As it occurs in typhoid fever the agglutinating reaction is obviously, as Widal has long maintained, a reaction of infection, for it is produced as a direct result of the invasion of the typhoid bacillus. But may it be more? May it also have a connexion with immunity, as Gruber has from the first believed, and may we thus reconcile to some extent the two diverging views? Emmerich and Löw[32] are of this opinion, and they believe that it has the most intimate connexion with the development of the bactericidal power, on which acquired immunity and recovery from the disease so closely depend. In short, agglutination, according to them, is nothing more than the first stage in the destruction of the bacilli. Under the influence of a single enzyme the sheath, they affirm, first swells up and later the bacilli are gradually destroyed.

This view is delightful from its very simplicity, but nevertheless it presents the very gravest difficulties. In the first place, if agglutination is but the first stage in the destruction of the bacilli, and if, as seems certain, recovery in a case of typhoid fever really occurs through the development of bacteriolytic properties, then it seems difficult to understand how cases can and do recover without the blood ever acquiring agglutinating power. Further, Neufeld[33] in a case of this kind was able definitely to prove that though the serum possessed no agglutinating capacity, yet it did possess very considerable preventive or bacteriolytic power, a minute quantity of the patient's serum protecting a guinea-pig from an otherwise fatal peritoneal injection of typhoid culture, while four times the amount of normal serum had no effect on a control animal. An exactly similar result was also obtained by Pfeiffer and Kolle[34] with an anti-cholera serum. The serum in this case possessed no agglutinating properties whatever, but bacteriolytic qualities to a remarkable degree.

It is obvious, therefore, that a serum may be strongly bactericidal without being agglutinative at all. The reverse also may occur. It may agglutinate strongly but possess no bacteriolytic properties. This was first shown by Fränkel and Otto,[35] who by feeding guinea-pigs on large quantities of typhoid cultures were able to render their blood agglutinative in dilutions of 1.200 and upwards, and yet out of 15 animals examined only three showed any bactericidal properties whatever. Similarly Widal and Sicard,[36] experimenting on frogs, were able to show that after an injection of typhoid bacilli the latter remained in the tissues for long periods and could 35 and 40 days later be recovered in the lymph sac alive and with their virulence unimpaired at a time when the lymph itself showed an agglutinating power of 1.1000. Lastly, the lack of correspondence between the agglutinative and preventive powers in animals inoculated with the typhoid bacillus has been clearly brought out by Deutsch[37] in his careful observations. To take but one example. If we compare the five sera in his table which had the highest preventive value (0·05) we notice that the agglutinating capacity of the same sera varied between 1.40 and 1.1500 instead of being identical in each, as on Emmerich and Löw's theory it must have been. From a consideration of these facts one result stands out clearly—namely, that agglutinins and lysines are absolutely distinct. Consequently Emmerich and Löw's theory in its original form cannot be maintained. It is true that as a rule both bodies are most often present together, so that a serum which is highly agglutinative is generally also highly bacteriolytic; but this does not by any means always occur; and to say therefore that because a patient's serum agglutinates therefore it *ipso facto* also contains bacteriolytic properties and that consequently the patient is protected against typhoid fever is clearly an error.

Agglutination, then, is a reaction of infection. But at present we have no direct evidence *proving* that it takes a share in the production of immunity, probable though this is. It may be, as Bordet[38] states, that agglutinated bacilli are more sensitive than others to the action of the alexines, or bactericidal bodies, and that the object of agglutination is therefore really to prepare the way for the action of the latter. This, however, is not yet proved, and meanwhile we must remember that a patient or an animal may be rendered

[27] Foulerton: Middlesex Hospital Journal, October, 1899.
[28] Malvoz: Annales de l'Institut Pasteur, 1897, p. 582.
[29] Blackstein: Münchener Medicinische Wochenschrift, 1896, Nos. 44 and 45, pp. 1067 and 1100.
[30] Bordet: Annales de l'Institut Pasteur, 1899, p. 225.
[31] Deutsch: Ibid., September, 1899.
[32] Emmerich and Löw: Zeitschrift für Hygiene, 1899, xxxi., p. 1.
[33] Neufeld: Ibid, 1899, vol. xxx.
[34] Pfeiffer and Kolle: Centralblatt für Bakteriologie, 1896, vol. xx., p. 129.
[35] Fränkel and Otto: Münchener Medicinische Wochenschrift, 1897, No. 39, p. 1065.
[36] Widal and Sicard: Comptes Rendus de la Société de Biologie, 1897, p. 1047.
[37] Deutsch: Annales de l'Institut Pasteur, September, 1899.
[38] Bordet: Ibid., 1899, p. 225.

absolutely immune to typhoid fever or cholera without the blood ever acquiring definite agglutinative properties at all, so that agglutination in the ordinary sense cannot be essential to the production of immunity. Possibly, however, even in these cases traces of the agglutinins may by slightly affecting the bacilli further the action of the lysines, and thus assist in bringing immunity about.

Bacteriolytic power.—We have seen, then, that in cases of typhoid fever the blood of the patient in the great majority of cases develops agglutinative properties. Bacteriolytic or bactericidal power is also actually acquired, as demonstrated by the observations of Chantemesse and Widal,[39] and Pfeiffer and Kolle,[40] and others. Indeed, on the acquisition of this power recovery chiefly depends. It should be noticed also that while the mode of origin of the agglutinins is open to discussion, our knowledge concerning the lysines is much more explicit. Thanks to the discoveries of Bordet,[41] Pfeiffer,[42] and Ehrlich,[43] it is now certain that for a serum to possess bacteriolytic properties two bodies must be present in it: first, a body of the nature of a digestive ferment, in no wise specific but present in minute quantities in normal serum, and to which Ehrlich has given the name "complement" or "addiment"; and secondly, the specific "immune bodies," side chains secreted directly from the cells of the body, and formed especially in the spleen, lymph glands, and bone marrow (Wassermann), as the result of the stimulus afforded by the presence of the specific micro-organism. The function of these latter bodies is to bring the addiment or digestive ferment, present only in minute traces, into direct connexion with the micro-organisms, a process effected, as Ehrlich has shown, by their possessing two different haptophoric groupings, the one impelling them strongly to unite with the bacteria (or red corpuscles in the case of hæmolysis) and the other joining them to the addiment. In this way the ferment which of itself would have but the feeblest power of acting on the bacilli, since only traces of it are present, is brought into immediate contact with the micro-organisms and its digestive action becomes at once apparent.

Antitoxic power.—Lastly, with regard to antitoxine. Is there a formation of this also and does the blood acquire antitoxic as well as agglutinative and bacteriolytic properties? At present we have no evidence whatever that such formation takes place. Sanarelli,[44] Pfeiffer and Kolle,[45] and Funck,[46] are all agreed on this point, and the result of their observations both on typhoid patients as well as on immunised animals shows that, just as in cholera, so also in typhoid fever, antitoxines if developed are formed only in such small quantities that their presence cannot be demonstrated. From analogy we should expect that some formation would take place and it may be that, though the cells secrete enough to neutralise the typhoid toxine, yet no hyper-secretion of these side chains takes place. At any rate, the fact remains that in typhoid fever the blood never acquires active antitoxic power.

Résumé.—If, then, we picture to ourselves the delicate changes which occur in the blood of a patient during the course of typhoid fever we should say that very early in the disease, as a rule during the commencement of the second week, agglutinative properties are in general acquired. But the date at which the agglutinins appear, the amount in which they may be present, and the length of time during which they may persist are subject to extraordinary variations. The reaction is undoubtedly one of infection, and its connexion with immunity, though probable, has not as yet been proved. A little later in the disease bacteriolytic properties make their appearance, and with the gradual increase in their amount the further growth of the bacilli in the body is checked, and finally the latter are gradually digested and destroyed. But even now the disease is not quite at an end, for the toxines set free by the destruction of the bacilli have first to be dealt with. In part they may be neutralised by antitoxines, but of this as yet we have no direct evidence, in part they are probably excreted by the usual channels and thus eliminated from the body.

[39] Chantemesse and Widal: Ibid., 1892, p. 768.
[40] Pfeiffer and Kolle: Zeitschrift für Hygiene, 1896, xxi., p. 203.
[41] Bordet: Annales de l'Institut Pasteur, 1895, p. 496.
[42] Pfeiffer: Deutsche Medicinische Wochenschrift, 1896, Nos. 7 and 8, pp. 97 and 119.
[43] Ehrlich and Morgenroth: Berliner Klinische Wochenschrift, 1899, No. 1 and No. 22. I am indebted to my friend Dr. Bulloch, Bacteriologist to the London Hospital, for pointing out to me the full value of Ehrlich's remarkable work.
[44] Sanarelli: Annales de l'Institut Pasteur, 1894, p. 375.
[45] Pfeiffer and Kolle: Zeitschrift für Hygiene, 1896, xxi., p. 203.
[46] Funck: Le Sérothérapie de la Fièvre Typhoide, Bruxelles, 1896.

TREATMENT.

During the last few years, then, our knowledge concerning the pathology of typhoid fever has materially increased. We know now that the disease consists in a general infection of the body by the specific micro-organism, instead of being a merely local disease as was once imagined. In addition to this we are beginning to gain a definite insight into the changes which take place in the blood and tissues as the result of the presence of the bacillus, and which eventually lead to the destruction of the micro-organism and recovery from the disease. Unfortunately, so far a similar advance has not as yet been made in the domain of treatment. The anti-typhoid serum, from which at first much was hoped, has not answered to its expectations, possibly because the serum so produced has only possessed bacteriolytic qualities and not antitoxic properties as well.

Preventive inoculation.—The method of preventive inoculation, indeed, worked out by Professor A. E. Wright[47] offers more immediate prospects of success. By means of similar injections of dead cultures animals may be rendered immune against an otherwise fatal dose of the living virus through their blood having acquired the bacteriolytic and other properties which are normally present in the human organism after an attack of typhoid fever. If, therefore, the virus be properly standardised, and a sufficient dose be injected, there is every reason to believe that immunity against the disease can be regularly acquired in man, though how long this immunity may last we cannot as yet say, a mere examination of the agglutinating power of the blood being in no wise sufficient to determine the point. The results of the method so far published are at least encouraging, the percentage incidence of the disease in nearly 3000 cases having been reduced from 2·5 per cent. among the uninoculated to 0·95 per cent. among the inoculated. The mortality also was somewhat less.

THE VALUE OF UROTROPIN IN TYPHOID FEVER.

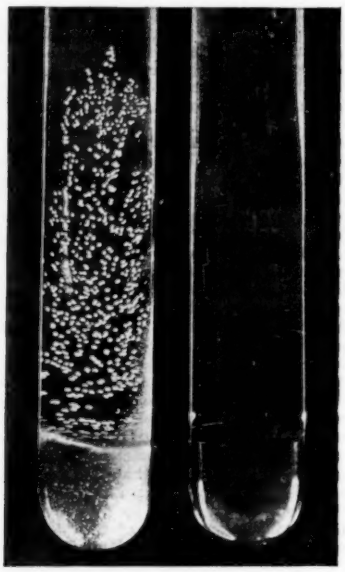
In one other direction also progress has been made. Our knowledge concerning the infectious character of the urine has led almost at once to the introduction of a drug which eliminates this danger altogether. I allude to urotropin, and I desire, in conclusion, to bring before you the marvellous effects which are produced by its administration in cases of typhoid bacilluria and cystitis, though I may say at once that my own observations do but confirm the results already obtained in this field by Richardson. Urotropin is formed by the action of formalin on ammonia and was introduced six years ago into medical practice by Dr. Arthur Nicolaier[48] as a urinary antiseptic. It was soon found to have considerable value in checking the decomposition of the urine in cases of ammoniacal cystitis, the effect being due, as Dr. Nicolaier has shown, to the liberation of free formalin from the drug after its passage into the urine. It is true that in the acid cystitis produced by bacillus coli it is almost without effect, so that it cannot be regarded, as some too hastily have thought, as a specific for all forms of urinary infection. So far, however, as one variety is concerned it does deserve the name. I allude to its effect on the true typhoidal affections of the urinary tract. Attention was called to this matter last year by Richardson,[49] who in nine cases found that the typhoid bacilli rapidly disappeared from the urine after its use, and from my own observations I can now most strongly support his results.

It would be unbecoming on this occasion, even if time permitted, to describe in detail my observations—these I have placed in an appendix—but I think that the following reproductions of photographs represent more clearly than any figures can do the valuable action of the drug.

Photograph 1 (Fig. 3) (Appendix, Case I.) shows two tubes of gelatine. Tube A, that on the left, was inoculated on the twenty-fourth day of the illness with two drops of the patient's urine. A pure cultivation of what proved to be typhoid bacilli developed (the opaque atypical appearance of the colonies being due to their having sunk a little from the surface into the gelatine owing to the very hot weather). The patient was then put on urotropin, 10 grains three times a day, and on the twenty-sixth day of his illness, after 30 grains of the drug had been

[47] Wright and Leishman: Brit. Med. Jour., Jan. 20th, 1900, p. 121. Professor A. E. Wright: THE LANCET, Jan. 20th, 1900, p. 150.
[48] Nicolaier: Zeitschrift für Klinische Medicin, 1899, p. 350 (with bibliography).
[49] Richardson: Journal of Experimental Medicine, 1899, vol. iv., p. 1.

FIG. 3 (APPENDIX, CASE I.).

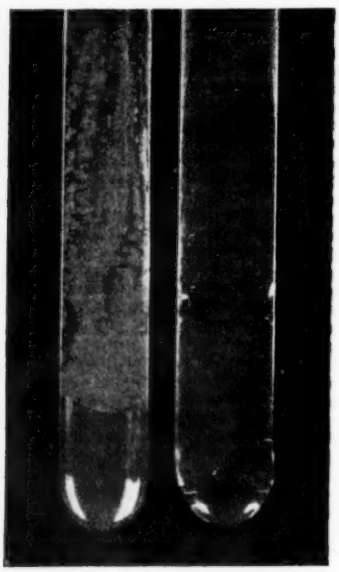


A B

The tube on the left (Tube A) represents a gelatine tube over the surface of which two drops of urine were spread. Many typhoid colonies have developed. (The opaque atypical appearance of the colonies is due to their having sunk a little into the gelatine, owing to the very hot weather.)

On the right Tube B shows a second tube over which two drops of urine from the same patient were spread, but after 30 grains of urotropin had been taken. Nothing has grown.

FIG. 4 (APPENDIX, CASE VI.).



A B

The tube on the left (Tube A) shows a gelatine tube over which a *trace* of urine was spread. Very many typical typhoid colonies are seen.

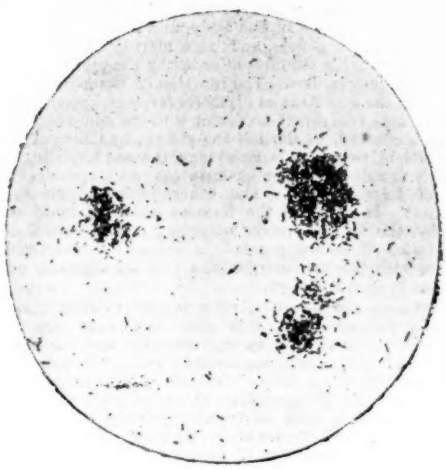
On the right Tube B shows a second tube over which *three large drops* of urine from the same patient were spread, after 30 grains of urotropin had been taken. Nothing has grown.

taken, cultures were again made. The photograph on the right shows such a one made with two drops of urine. Nothing, however, grew. The typhoid bacilli had all been destroyed and eliminated, and though the drug was stopped after 60 grains had been given, cultures made on four subsequent occasions never showed any return of the micro-organisms.

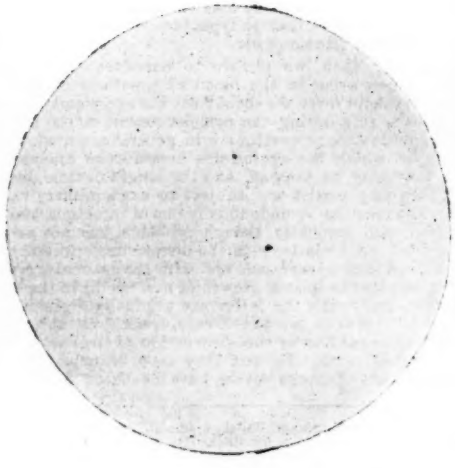
Photograph 2 (Fig. 4) (Appendix, Case VI.) shows a somewhat similar result. The photograph on the left represents a gelatine tube inoculated with a *trace* of the urine of Sept. 16th (the fifty-first day); a pure culture of typical typhoid colonies is seen. The patient was then put on urotropin (30 grains ter die) and the photograph on the right represents a gelatine tube over the surface of which *three large drops* of urine were spread, the urine having been obtained after 30 grains of the drug had been taken. The cultivation has proved sterile. The typhoid bacilli had been eliminated and destroyed. The drug was, however, continued until 120 grains had been given (four days in all), but the typhoid bacilli did not return, as proved by subsequent cultivation of the urine.

Photograph 3 (Fig. 5) (A) and (B) (Appendix, Case V.)

FIG. 5 (APPENDIX, CASE V.).



a



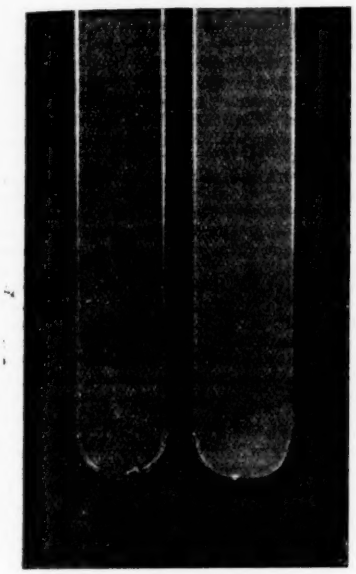
b

Photograph *a* shows a drop of the urine dried and stained before the administration of the drug. Innumerable typhoid bacilli are seen. Photograph *b* shows a drop of the urine passed after the administration of 30 grains, dried and stained as before. No bacilli are seen and cultures proved their absence.

represents the same result, but in a somewhat different way In this case a drop of the urine itself was stained before and after the administration of 30 grains of the drug. In the one case enormous numbers of typhoid bacilli are seen, in the other none are visible. Cultures also showed their absence. The drug was continued until 120 grains had been given and was then stopped; the bacilli, however, did not return.

Photograph 4 (Fig. 6) (Appendix, Case III.) shows the mar-

FIG. 6 (APPENDIX, CASE III.).



On the right a test-tube full of turbid bacilluric urine is seen, on the left the clear urine passed about 18 hours later, after only 20 grains of the drug had been taken. The absence of the bacilli was confirmed by culture (The reproduction does not do justice to the contrast, which was well exhibited by the photograph.—ED. L.)

vellous naked-eye change which is produced in the urine by the administration of the drug. The photograph on the right represents the urine itself, on the eighteenth day, turbid as it was with bacilli. That on the left shows the test-tube full of urine passed on the following day after 20 grains only of the drug had been taken. It was now quite clear to the naked eye. Cultures also made with three drops of the urine showed no growth. Further examination, however, proved that in this case a few bacilli were really present, even after 60 grains had been taken, and that, therefore, to be quite certain of curing the condition, it would always be wise to continue the use of the drug for a week.

The photographs which I have shown happen to deal with cases of bacilluria, but in cases of typhoid cystitis, as the detailed record of the cases shows, the effect of the drug is almost as instantaneous, the pus as well as the bacilli disappearing within one, or at most two, days.

If, then, we sum up the effect of the drug on cases of typhoid bacilluria and cystitis we may say that the immediate effect of the drug is extraordinary. If the urine has been turbid before with bacilli, at the end of 24 hours—that is to say, after 30 grains have been given—the urine will now be found quite clear. Possibly cultures may reveal a few bacilli, but this is not always the case. So marked and immediate, indeed, is the effect of the drug that, if the urine is not clear at the end of 24 hours, we may at once suspect most strongly that the bacillus present is not the typhoid bacillus but one of the varieties of bacillus coli. If the drug be continued a permanent cure will be effected (unless possibly in the event of reinfection from the blood). Such a permanent cure may sometimes be effected by 60 grains of urotropin, but to make certain it would be well always to continue the drug for at least one week.

Under what circumstances, then, should the drug be given in cases of typhoid fever? Evidently whenever a urinary complication due to the typhoid bacillus has occurred. But seeing that at the present time the bacilluria and even the cystitis most often passes unnoticed from the patient complaining of no symptoms, and seeing that they are always a source of danger, the question arises whether the drug should not be given (30 grains daily) in all cases of typhoid fever, throughout its whole course and during the first three weeks of convalescence, as was first suggested by Richardson, with the intention of preventing these complications. It should be added that, taken in such doses, and during such a prolonged period, the drug produces no ill effect beyond occasionally some urethral pain if the urine is allowed to become concentrated. It may be combined, too, with any ordinary medicine, and therefore interferes in no way with the usual treatment of the disease. The routine use of the drug, therefore, would seem to be strongly indicated, for no nursing, however good, no care taken with the urine, can possibly prevent some soiling of the linen and the possible spread of infection if the case be one of typhoid bacilluria. In hospital practice, however, with good nursing the matter is of less importance. In private practice the case is very different. I do not here refer to cases treated in the houses of the rich but rather to those occurring in the squalid dwellings of the poor, to those sad cases where whole families live in single rooms, and where the spread of infection from the sick to the healthy is no fiction but an actual fact, and one, too, which is becoming more generally recognised.[50] Since in all probability in such cases, as I have elsewhere pointed out, the urine rather than the fæces is chiefly at fault, it is permissible to hope that by eliminating the former source of danger altogether a very sensible diminution in the spread of the disease may in time be brought about.

I have now brought to a conclusion the task with which I have been entrusted. In expressing my deep sense of the honour thereby conferred upon me by the College I desire also to record my gratitude to the Physicians and Pathologists of St. Bartholomew's Hospital for the help which they have at all times given to me in my work. If I have succeeded in any way in carrying out the wishes of the founder of these lectures it is to their unvarying kindness that I must attribute my good fortune.

APPENDIX.

The following cases of typhoid bacilluria and cystitis treated with urotropin demonstrate clearly that in this drug we possess, as Richardson first stated, an almost specific remedy. To be certain of effecting a cure the drug should be given for a week (10 grains three times a day) though often very much smaller amounts are in reality sufficient. The urine in the following cases, the patients with one exception all being males, was passed directly into a sterilised vessel, and cultures were then made on gelatine or agar. One tube received one drop of urine and a second three, or more.

CASE I. (Luke Ward; Dr. Gee).—The patient was a male, aged 21 years. He had an attack of typhoid fever of medium severity. On Sept. 5th, 1899 (the twenty-fourth day), the urine was obtained and was found to be clear, acid, and to contain no albumin, but cultures made from two drops of the urine revealed a pure culture of typhoid bacilli (Fig. 3). On Sept. 6th the patient was put on urotropin, 10 grains ter die, the drug being stopped on the 8th, after 60 grains had been given. On the 7th (the twenty-sixth day of the disease) three drops of the urine proved sterile on cultivation. On the 8th (the twenty-seventh day) the same result was obtained with eight drops. The temperature reached normal on the 9th and the urine though tested by cultivation on four subsequent occasions (Sept. 16th and 23rd and Oct. 5th and 16th) never showed any return of the typhoid organisms. In this case, then, not a very severe one, the bacilli were entirely eliminated after 30 grains of urotropin and they never returned, though only 60 grains were given in all. The following case is also somewhat similar, though unfortunately it was not followed up after the cessation of the drug.

CASE II. (Hope Ward; Dr. Gee).—(In this case, the only female case recorded, the urine was drawn off by catheter.) The patient had an extremely severe attack of fever followed by a relapse. The temperature was, however, coming down, when on Oct. 4th, 1899 (the fiftieth day of the disease),

[50] Dr. A. Hill, the medical officer of health of Birmingham, in his report for 1898 computed that in that city during the year "*at least* 86 cases of typhoid fever, or one-seventh of the total number, were directly due to infection from another case." Others elsewhere have expressed a somewhat similar opinion.

she experienced some pain and difficulty in micturition. The urine also was found to contain pus and typhoid bacilli were present in it in enormous numbers. On Oct. 6th the condition of the patient's urine was the same. She was put on urotropin—eight grains night and morning—and four days later, on Oct. 10th, on which day the temperature reached normal for good, the urine was found to be quite natural in every way; cultures also proved it to be sterile. 72 grains of urotropin had in this case eliminated the micro-organisms.

It seemed probable from these cases that small quantities of urotropin—60 grains, for example—would be sufficient to free the urine permanently from typhoid bacilli. As a matter of fact, though this is sometimes the case it is not always true. If the urotropin be given only for a couple of days it may happen that after an apparent total disappearance from the urine the bacilli may return after the drug has been stopped and even become as numerous as before. The explanation doubtless is that a few isolated bacilli, having become lodged among the cells of the bladder wall, are thereby protected from the action of the drug and so escape destruction. As soon, however, as the urine ceases to contain formalin they begin to germinate again and the bacilluria returns. The following case is a good example of this class.

CASE III. (Matthew Ward; Sir Dyce Duckworth).—The patient was a male, aged 24 years. He had a very severe attack of typhoid fever. The temperature reached normal for good on the twenty-seventh day (Nov. 17th, 1899) and did not rise again. The urine was examined on the eighteenth day (Nov. 8th) and was found to be turbid from the presence of myriads of typhoid bacilli. It was acid and had a faint cloud of albumin. On the same day the patient was put on urotropin, 10 grains ter die. The drug was continued until 60 grains had been given and was then stopped. The urine was examined after 20 grains of the drug had been taken and the most marked change was noticed in it (Fig. 6). Instead of being turbid from bacilli it was now quite clear and cultures (three drops of urine) showed no growth. Similar results were obtained from the urine after 40 and 60 grains had been taken. It seemed, therefore, that the patient was cured. This, however, was not so, for a week later, though the urine was clear, acid, and contained no albumin, cultures revealed the presence of many typhoid bacilli. Three days later, on the 20th, the condition was worse, the urine was now turbid with bacilli and contained pus. The upper layers of the urine after the pus had settled showed no albumin. On this day, therefore, the patient was again put on urotropin for two days, the drug being stopped after 60 grains had been administered. The result is instructive. After 20 grains had been taken the urine had again changed most marvellously. Instead of being turbid it was clear and contained no albumin or pus. Under the microscope, however, a few typhoid bacilli were seen and culture revealed the presence of many. After 30 grains cultures from three drops of the urine showed only 30 colonies of typhoid bacilli, after 40 grains only six colonies, while after 60 grains (Nov. 23rd) one colony only was obtained. The bacilli evidently had not been entirely eliminated and, as might have been expected, they at once returned when the urotropin was stopped (Nov. 23rd). Thus four days later (Nov. 27th) the urine was again turbid and typhoid bacilli were found; it contained a little pus but no albumin. Urotropin was again ordered in the same dose but for a longer period of time. It was given from Nov. 27th to Dec. 4th, 210 grains being given in all. This proved completely successful. After 20 grains the urine again became clear and cultures revealed no typhoid bacilli. So also after 110 grains had been given. On Dec. 4th the urotropin was stopped, but the urine, though examined on Dec. 6th and 16th, never showed any return of the bacilluria. The case is of interest, then, as showing that sometimes the drug must be given for longer periods in order to effect a cure, and accordingly in the following case this was done.

CASE IV. (Luke Ward; Dr. Gee).—The patient was a male, aged 36 years. He had an attack of medium severity, though the fever was prolonged, the temperature reaching normal only on the fifty-third day. The urine was examined bacteriologically three times during the attack, but it was always natural; typhoid bacilli were never present. Five days after defervescence, however (Nov. 24th, 1899), the urine was found to be turbid with typhoid bacilli and to show a deposit of pus. There was no pain or frequency of micturition; there was a cloud of albumin. On the following day (the 25th), the condition of the urine being the same, the patient was put on urotropin, 10 grains ter die. It was given for three days (Nov. 25th to 28th) and then stopped, 90 grains being given in all. After 20 grains had been taken the urine again showed the same marvellous change observed in other cases. Instead of being turbid with bacilli not a single bacillus could be seen under the microscope, though 24 colonies grew on a tube inoculated with three drops of urine. After 50 grains the urine was sterile and again after 80 grains (Nov. 28th). On this day (the 28th) the urotropin was stopped, but the urine, though tested on Dec. 1st, 6th, and 12th, never showed any return of the bacilli or pus; the cure was complete.

The three following cases are very similar. They all show the total disappearance of the bacilli after 30 grains of the drug, but to make sure of its permanence the administration was continued for a few days longer.

CASE V. (Elizabeth Ward; Sir T. Lauder Brunton).—The patient was a male, aged six years. He had a severe attack of fever. The temperature reached normal for good on the thirtieth day (August 19th, 1899). Nothing abnormal had up to that time been noticed with regard to the urine. On the following day, however (the 20th), hæmaturia suddenly occurred. On the 22nd the hæmaturia was still present. Under the microscope, in addition to red corpuscles, pus cells and many bacilli were seen, which latter proved on cultivation to be typhoid bacilli. The hæmaturia then ceased, but the bacilluria continuing the patient was put on urotropin, 10 grains three times a day, for four days (August 25th to the 29th), 120 grains being given in all. On the following day (the 26th) after 30 grains of the drug had been given the bacilli were found to have entirely disappeared. None could be seen under the microscope and none demonstrated by culture (Fig. 5). The same result was obtained on the 28th after 70 grains of the drug had been given. On the 29th the urotropin was stopped (120 grains having been given in all) and two days later (the 31st) cultures still showed the absence of typhoid bacilli.

CASE VI. (Mark Ward; Dr. Church).—The patient was a male, aged 20 years. He had a very severe attack followed by a relapse. The temperature reached normal for good on the fifty-first day. On Sept. 9th (the forty-fourth day, or fourth day of the relapse) the urine was natural in every way. It was clear, acid, and contained no albumin; cultures showed the absence of typhoid bacilli. On Sept. 11th a marked change occurred. The urine was now turbid and contained innumerable typhoid bacilli; it was acid and showed a very faint cloud of albumin. Five days later, on the 16th, a similar result was obtained. On this day the temperature reached normal for good. The patient was put on urotropin, 10 grains three times a day. On the following day, the 17th, after 30 grains of the drug the same marvellous change that has been noticed so often before was here again seen. The urine instead of being turbid with myriads of typhoid bacilli was now clear. No bacilli were seen under the microscope and none were revealed by culture. (Fig. 4.) After 60 grains also the same result was obtained. The urotropin was continued for four days (Sept. 16th to 20th), 120 grains being given in all. The urine was examined again on the 28th, but with a negative result, the cure being complete.

CASE VII. (Colston Ward; Dr. Hensley).—The patient was a man, aged 42 years. He suffered from an extremely severe attack of the fever, followed by a relapse. The temperature reached normal for good on the fifty-second day. The urine was examined on four occasions (the fourteenth, twenty-first, thirty-third, and forty-sixth days) during the attack. But though on the fourteenth day it contained one-fifth of albumin no typhoid bacilli were ever found. Nine days after defervescence, however (on Dec. 22nd, 1899), it was found to be turbid with typhoid bacilli. A week later (on the 29th) the bacilli were fewer in number but could still be seen under the microscope. The urine was acid and contained no albumin. The patient was now put on urotropin, 10 grains ter die, and on the following day, after 30 grains had been taken, the bacilli were found by culture (four drops) to have entirely disappeared. A similar result was obtained on Jan. 2nd, 1900, after 160 grains had been administered. On the 4th the drug was stopped, 180 grains having been given in all. The urine was again examined on Jan. 8th but was still sterile.

Lastly, I may quote the following two cases in which after 50 and 60 grains respectively the bacilli were present, but

in which they disappeared finally after a few more doses of the drug.

CASE VIII.—The patient was a male, aged 13 years. He was admitted late in the disease. The temperature reached normal on the twenty-seventh day. Two days later (Nov. 29th, 1899)—that is to say, when the temperature had been normal for two days—the urine was found to be bacilluric to the naked eye. It was acid and contained the faintest trace of albumin but no pus. The bacilli proved to be typhoid bacilli. On Dec. 1st and 2nd the condition remained unchanged. On the latter date urotropin, 10 grains three times a day, was ordered. On the following day (Dec. 3rd) a marked change had occurred after 20 grains only had been taken. The urine was found to be quite natural to the naked eye and to the microscope. It was clear, acid, and contained no albumin. No bacilli could be seen and culture (four drops) revealed none. A few, however, were still lurking in the bladder, for on Dec. 4th, the patient then having taken 50 grains of urotropin, one single colony did develop on the culture media. The drug was continued and the urine was again tested on Dec. 6th, when 140 grains had been administered. The urine now proved sterile. The urotropin was stopped, 140 grains having been given in all, but the urine tested by culture on subsequent occasions (on Dec. 9th and 16th) showed no return of the bacilli.

CASE IX.—The patient was a male, aged 31 years. The temperature reached normal on the thirty-first day for good. On Nov. 25th, 1899 (the twenty-third day), I first saw the urine. It was immediately seen by the naked eye to be turbid with micro-organisms which on culture proved to be typhoid bacilli. It was acid and contained no albumin, but showed a sediment of pus. There was no pain or frequency of micturition. On Nov. 29th the condition of the urine was the same; urotropin was prescribed in the same doses as before. On the following day (the 30th), after 30 grains had been taken, there was a marked improvement. The urine, however, still contained a little pus and under the microscope a few bacilli could be seen. Cultures showed many colonies. On Dec. 1st, after 60 grains had been taken, the urine was clear, contained no pus, and no bacilli could be seen; 21 colonies, however, developed on the cultures (four drops of urine). On Dec. 4th, 110 grains having been now given, the urine proved sterile. Two days later (Dec. 6th) the drug was stopped. In all 200 grains had been administered. Cultivations proved that the urine on this day contained no typhoid bacilli and similar results were obtained on Dec. 9th and Dec. 16th. The bacilli in this case, then, disappeared after 110 grains of the drug had been given. To make certain, however, of a permanent cure 200 grains were given in all.

In conclusion, the following case may be briefly mentioned because it shows so clearly the long duration of the bacilluria if left untreated and the immediate and permanent effect of the drug in arresting it.

CASE X. (Colston Ward; Dr. Hensley).—The patient was a man, aged 22 years. On admission, on the thirteenth day of his illness, he was found to be suffering from typhoid fever and nephritis. (The case is referred to in Lecture II.) The urine was turbid with typhoid bacilli, and this condition continued unaltered throughout his illness, being confirmed by bacteriological examinations made on the sixteenth, twenty-fifth, thirty-second, and thirty-fourth days. On the latter day (Jan. 24th, 1900) the temperature reached normal, the urine still containing myriads of typhoid bacilli. Urotropin, 10 grains three times a day, was ordered and was given from Jan. 24th to 31st, 210 grains being taken in all. On Jan. 25th, after 20 grains had been taken, colonies of typhoid bacilli still appeared in the culture tubes. But on the 26th, 27th, 29th, and 31st the urine was sterile. The drug was now stopped, but the cure had been permanent, for further bacteriological examinations made on Feb. 3rd, 5th, 9th, 14th, 19th, 26th, and March 7th showed no return of the micro-organisms.

PROSECUTIONS UNDER THE FOOD AND DRUGS ACT.—At Calne, Wiltshire, on April 5th a grocer was fined 1*s.* with 7*s.* costs for selling baking powder which contained 38 per cent. of alum; another grocer was ordered to pay costs for selling carbonate of magnesia for magnesia, and a confectioner was fined 1*s.* with 7*s.* costs for selling as quinine wine a liquid which consisted of orange wine containing 10 grains of quinine hydrochlorate per pint, whereas the quinine wine of the British Pharmacopœia contains 20 grains to the pint.

PLAGUE VIEWED FROM SEVERAL ASPECTS.[1]

BY W. J. SIMPSON, M.D. ABERD., F.R.C.P. LOND.,
PROFESSOR OF HYGIENE, KING'S COLLEGE, LONDON.

PANDEMIC PLAGUE AND ENDEMIC CENTRES.

SIX years ago plague was regarded as a disease only of historical interest. Its presence in one or two centres in Persia, India, Arabia, and China was not considered to be of much importance, its continuance there being attributed in the main to the filthy condition under which the inhabitants dwelt, which prevented the disease from being completely stamped out. This view took no cognisance of the natural history of plague, or of the rarity of an epidemic disease completely disappearing from every part of the world, or of the existence of other factors besides ordinary sanitary conditions which periodically in the ages give to epidemic diseases a fresh impetus that brings them to the front as active agents. If we are to be guided by historical records it is clear that plague has always been characterised by periods of activity and of quiescence, often disappearing completely from the countries in which it has prevailed for years and not re-appearing for long intervals and then re-appearing in a pandemic form. The last pandemic of plague was in full activity in the seventeenth century and covered a large portion of Asia, Africa, and Europe. Towards the end of the seventeenth century it began to retire and continued in a state of retrocession for 150 years, until in 1845 it disappeared from Egypt which had for many years been an endemic centre. Its cessation in such a centre was considered by some to be a triumph for sanitary science as understood 50 years ago; but it is now known from Arabian sources that similar disappearances have taken place before and that in one of these intervals Egypt was free from plague for at least 300 years. Since 1850 the tendency of plague to fall still lower in the pandemic or epidemic scale has been arrested, and there has been a visible recrudescence, as manifested in the local outbreaks a little over 20 years ago in Asia Minor and on the Volga, and in the extension of plague from Yunnan to Pakhoi about the same time. It is due to these smaller recrudescences that we have become familiar with the old and new endemic centres in Arabia, in Mesopotamia, in Benghasi in Northern Africa, in Ghurwal and Kumaon in India, and in Yunnan in China. It is a remarkable fact, however, that the more the records of plague are studied the more these endemic centres recede and the more certain it becomes that "endemic centre" is only a relative term. There are, so far as can be made out, no permanent homes of plague. Even in Irak in Mesopotamia, the oldest and most permanent home we are acquainted with, plague disappeared for 75 years during the Abbasidic dynasty, and later for 100 years. There are no restricted localities where it can be said that plague has always and perennially existed. The endemic centres shift from one locality to another. Sometimes they are in the highlands and at others in the lowlands. On the strength of plague being endemic in Egypt and Mesopotamia for so many centuries the theory was held that plague took its origin in the low-lying marshes and inundated lands of these countries and that these were the conditions necessary for its annual reproduction. To-day this can be no longer exclusively held, for the present endemic centres of plague are in the highlands of Arabia, India, and China.

The Chinese endemic centre in Yunnan, from which the present pandemic is derived, is between 5000 and 7000 feet high. It has been known as an endemic centre of plague since 1870, but there are Chinese records which seem to indicate that the disease probably existed there over 100 years ago, for mention is made in the last years of last century of a strange and fatal rat disease occurring which also affected the inhabitants. There are no records discovered which make the endemic centre older than this, and there is no evidence to show that the Black Death of 1348 arose from Yunnan. M. Rocher, who first drew attention to Yunnan as an endemic centre of plague, is of opinion that it was first introduced before 1840 by Mohammedan pilgrims returning by Burmah from the Hedjaz, and

[1] An address delivered before the South-West London Medical Society on March 14th, 1900.

that it has continued to be endemic in that province since. A notable fact connected with this centre is that notwithstanding the backward condition of sanitation in China the tendency of plague to spread from Yunnan has been so slight, even in the presence of a large rebellion in the province, that it has taken more than 50 years to pass from Yunnan to Canton, a distance of not more than 1000 miles. For several years previously to its arrival in Canton it had spread to smaller towns but had never assumed any large epidemic proportions. In 1894, however, the disease obtained a thorough hold of Canton and destroyed in a short time 80,000 of its inhabitants out of 1,000,000. Since 1894 plague has prevailed more or less in Northern and Southern China, Formosa, Japan, India, the Philippines, Honolulu, the Mauritius, Jeddah, Alexandria, and Oporto, and has made its appearance in Southern and Central America, on the eastern coast of South Africa, and in Australia. True, it is only in India, China, Formosa, and the Mauritius that plague has assumed an epidemic form of any dimensions, but its expansion over different parts of the world is a fact the significance of which has to be carefully considered and the importance of which is not to be minimised by its apparent powerlessness to cause a destructive epidemic. The general mildness and circumscribed limitations of the indigenous cases which have sprung up outside Asia in those places into which plague has been imported tend to give rise to the impression that the plague no longer possesses, except among Asiatic races, its power of mischief, but against this is to be pointed out the fact that, with the exception of the Black Death in the fourteenth century the ordinary behaviour of plague in new localities is slow and insidious, and that its hold on a locality is not necessarily to be measured by the effect produced on its first arrival or even on its second or third manifestation. We have a good illustration of this in Calcutta, in which plague cases have existed on and off since 1896, and it is only now in 1900 that the cases are beginning to assume higher proportions. The Great Plague of London, again, was but the culminating stage of several previous epidemics occurring at various intervals of time over some 70 years, none of which were free from a few cases of plague. As in a localised epidemic, even when severe, the disease is noticed to confine its energy in the early stages to a small portion of a city and but slightly to affect districts distant from this centre until a considerable time has elapsed or perhaps not until the plague has disappeared altogether from the locality first affected, so also plague in its epidemic or pandemic form sometimes advances in a similarly halting fashion, acquiring slowly and gradually a sure foundation for its future progress wherever conditions exist favourable to its development.

SOME CAUSES OF OBSCURITY AS REGARDS MODE OF EXTENSION.

Modern systems of rapid communication by which intelligence of events occurring in different parts of the world become quickly known, combined with a more accurate knowledge of the disease, place us to-day in a much more advantageous position for watching the broadcast sowing of the seed preparatory to its ripening than was possible in the olden days, and probably it is to the absence of this means of intelligence in past times that so much confusion arose regarding the sources and origin of epidemics. But even with the advantages named it is a curious fact that the manner in which a locality becomes infected can seldom be determined, and in the investigations which have been carried out to decide this question the cases which were supposed to be the first are almost invariably found to be preceded by other cases until the record goes back to a time when nothing can be definitely settled. Bombay, Alexandria, and Oporto are examples. There can be no doubt that the disease was imported into these towns, but when and in what way are unknown. Conjecture has always to fill up the gap unless in those exceptional cases in which the imported disease catches on immediately. Investigation on systematic lines will alone clear up satisfactorily these obscurities. In the meantime the mystery attaching to the origin of plague in many localities may be partly explained by the fact that until recently the various types of plague were not clearly defined and consequently easily escaped recognition, and partly to the fact that the disease is disseminated by animals, especially rats. These are factors which certainly play an important rôle in the spread of this insidious disease.

Of the varieties of plague the ambulant, the fulminating, and the pneumonic are the most difficult to diagnose. The ambulant is apt to be overlooked because of the mildness of the symptoms. There are slight fever, malaise, headache, congested eyes, and a glandular swelling, but the sickness is often short in duration and does not attract any particular attention. The fulminating type and the pneumonic type are severe and fatal forms of plague, often without buboes, and are specially likely to be taken for other diseases, the latter being mistaken for some severe affection of the lungs. An acquaintance with the fact that there are different types of plague does not assist to any great extent unless these types are diagnosed when met with and it must be confessed that owing to the deceptive characters which they assume there is great risk of them being not recognised.

The importance of the dissemination of plague by rats is only gradually being appreciated. It is a well-attested fact and has in numerous localities been the precursor of an extensive outbreak. The rat plague is also slow in its progress and it must not be imagined that it is just previously to the rats dying in their hundreds and thousands that plague is imported into the locality; the origin has to be sought at a much earlier period when mortality occurs only among one or more rats in groups. It was a well-known fact among the ancient Hindoos that when rats began to die in a house it was time for the inmates to leave their abode. Rats when they sicken with plague leave their holes and come out into the open. They look ill and are in a dazed condition, their eyes are watery and bleary, their coats are partially deprived of hair, and they hobble about with difficulty and stagger and fall. They make very little attempt to escape when approached and their behaviour is so extraordinarily different from what is usual that the illness from which they are suffering may be at once suspected. The glands of plague-infected rats are enlarged and these, together with the internal organs and blood, contain plague bacilli. It is not safe to handle rats which are either suffering, or have recently died, from plague.

It has been a decided advance in our knowledge to learn that there are varieties of plague, that they are not easily recognised, and that rats are susceptible to plague and are disseminators of it, and the want of that knowledge accounts in no small measure for the frequent failure to determine precisely either the means by which, or the time at which, plague is introduced into a locality. Plague has often been connected with the corn ships of an infected country reaching a healthy port. When not brought by infected men or their personal effects there can be but little doubt that the infection was not in the corn but in the rats amongst the corn.

SPECIAL DANGER TO OTHER COUNTRIES DURING THE EARLY AND LATE STAGES OF AN EPIDEMIC.

Great importance has always been attached to the danger of the extension of plague when a town is in the throes of an epidemic, but probably there is more danger to countries communicating by sea with an infected port at the beginning or decline of an epidemic than when it is at its height and everyone is in a state of alarm and strict precautions are taken both at the infected port and the healthy port. In the early stages, while there is no suspicion of the disease existing, the infection may readily be transported to other countries, and it depends on whether the imported cases are at once recognised or not as to the disease having a chance of being disseminated. In September, 1896, two cases of plague occurred at the London Docks in ships that left India before plague was even suspected to exist in that country. Early recognition prevented extension. Let us suppose for a moment that the disease had not been recognised and, having found a favourable soil, had spread; then the simultaneous or almost simultaneous appearance of plague in London and Bombay would have perplexed everyone. In 1899 three cases of plague occurred in Asunçion in Paraguay among Portuguese sailors who arrived from Oporto nearly two months before the disease was suspected to exist in Portugal. The disease was not recognised as plague, and if suspicion had not been aroused that one of the cases was yellow fever, for which the authorities were at that time on the watch as it was present in Buenos Ayres, the two deaths would have passed unnoticed and the clue to subsequent events would have been lost. As these cases are interesting from a diagnostic point of view and illustrate the ease with which a centre of infection can be established, I shall give a short account of them.

The first case at Asunçion showed a glandular enlarge-

ment and some obscure lung affection, death being attributed to disease of the lungs. The second case showed symptoms believed by one medical man to be those of acute gastritis and by another to be those of a general infection, possibly yellow fever. It was because of this latter opinion that several distinguished physicians were sent to attend the post-mortem examination in order to decide the question, as it was of importance that if the disease were yellow fever precautionary measures to prevent its spread should be immediately adopted. The necropsy revealed general congestion of the internal organs, hæmorrhagic swellings in the spleen, an enlarged liver, and an acute gastro-enteritis. The conclusion arrived at was that it was not a case of yellow fever. No one, however, suspected plague, which was unknown in America and which was not known to be nearer than Egypt. The third case, which came off the same ship, was that of a sailor who went to a small village at some distance from Asunçion. He was taken ill there and five months afterwards, on his return to Asunçion, he was found on examination to have the signs still upon him of buboes characteristic of plague. The three cases are excellent examples of the uncertainty of the diagnosis of plague when no suspicion of plague is in the mind of the medical man. The true significance of these cases in Asunçion was not realised until five months afterwards and then only when a new disease, distinguished by symptoms resembling typhus fever, meningitis, and pneumonia, and frequently accompanied by glandular enlargements in the groin, axilla, or neck, had appeared and prevailed, first of all in a sporadic form in the town for about two months, and later in an epidemic form in the barracks. Only gradually was the suspicion aroused that the disease might be plague, and once that suspicion became general, the discovery, isolation, and culture of the plague bacillus, the classical symptoms of plague which many of the cases presented, and the no less characteristic anatomical features which were observed at the post-mortem examination cleared away every possible doubt. In an investigation which followed this discovery no difficulty was experienced in tracing the new disease back to its commencement; nor was there any difficulty in recognising the symptoms and post-mortem appearances which had perplexed the medical men six months previously as belonging to true cases of plague though the cases appeared at a time when plague in Oporto, where they came from, was not even suspected to exist.

THE IMPORTANCE OF THE ASUNÇION OUTBREAK.

Even when plague has acquired a firm hold on a locality it is almost impossible to prognosticate its course. Local outbreaks vary exceedingly in their intensity and extent. They may be rapidly spreading and fatal, or they may be exceedingly slow in their extension, and they may be deadly or benign in their character. In Canton the disease rapidly spread, destroyed a large number of the inhabitants in about seven months, and then declined, not to re-appear in the following years. In Bombay it has continued year after year in a less intense form than in Canton, but has managed to destroy nearly as many inhabitants. In Calcutta it has been comparatively mild but is slowly becoming more intense. In Jeddah, Alexandria, and Oporto the first outbreak has been extremely limited in its nature. In Asunçion plague never assumed the dimensions of a large epidemic. 300 deaths in all would probably cover the extent of the outbreak, and it has been of a mild nature, many of the cases being of the ambulant form, with simple glandular enlargement and no serious illness. Even the severe cases did not present a higher mortality than 50 per cent., which contrasts favourably with the mortality in India and China of 80 per cent. The importance of the outbreak of plague at Asunçion does not consist in the small mortality and comparative insignificance of the numbers attacked, but in the fact that plague has acquired in this locality a centre for its diffusion to other parts of the American continent. The disease has spread without hindrance to Buenos Ayres, to Santos, to Rosario, and to Central America, and the outlook is serious because a continent never known to have been visited by plague is now infected in several localities. Nor is it likely that the infection will be limited even to America, for the infected ports in that country are now a fresh source of danger to other parts of the world, as evidenced by the recent occurrence of plague at Cape Town on board of a vessel recently arrived from Rosario.

THE DIAGNOSIS OF PLAGUE.

As previously stated the difficulty of diagnosis of plague arises from the several types and forms which it assumes, and unless the medical man is on the alert for plague and is fully conversant with the types the disease may easily at the commencement escape attention. In Bombay some of the earlier cases, with swollen cervical glands and throat symptoms, were mistaken for diphtheria. In Jeddah, where lung symptoms predominated, the earlier cases were taken for influenza; and in Calcutta, where the ambulant or mild form with buboes occurred, some of them were attributed to syphilis, others to non-venereal buboes or malaria, and others to injury due to a strain or accident. It will thus be evident that a disease which may be mistaken for yellow fever, gastro-enteritis, typhus fever, diphtheria, influenza, syphilis, malaria, and parotitis is one in which diagnosis from clinical symptoms alone is by no means easy.

The two most perplexing forms of plague are the ambulant and the pneumonic. The ordinary bubonic form has, as a rule, very characteristic symptoms. There are certain symptoms which are common to all severe forms of plague. These are the peculiar expression of the face, the halting speech, the appearance of the tongue, and the staggering gait. The countenance in the early stages depicts anxiety and distress, in the later stages resignation and apathy. When delirium is present the expression may be one of terror. The eyes are red and congested, the conjunctivæ being injected, but there is no photophobia. The patient has the appearance of being under the influence of a hypnotic, yet he is awake with eyes wide open. The speech is stuttering, thick, lisping, and indistinct, often like that of a drunken man. When spoken to the patient often begins a sentence and forgets to finish it. The tongue is early coated with a whitish fur except at the tip and the edges, which are irritable and red. The gait is staggering, sometimes like that of a drunken man, and owing to giddiness there is a great tendency for the patient to fall. From this description it will not be surprising to hear that on occasions an individual with plague has been mistaken for a drunkard and has fallen into the hands of the police. In many plague patients there is a desire to wander and there is great difficulty in keeping them in bed. This desire to wander is attended with great danger to the patient owing to the condition of the heart causing a faint which may never be recovered from.

When fever and the peculiar physiognomy, hesitating speech, staggering gait, and condition of the tongue are met with an examination should be made for the presence of buboes or of lung disease and these should be supplemented by an examination of buboes, blood, and sputum for bacilli. The ordinary bubonic plague is unlikely to be confused with other diseases, the symptoms being well defined. There may or may not be any premonitory symptoms such as malaise and rigors. It most usually begins with sudden fever, rising to 103° F., to 104°, or even to 105°, with nausea, vomiting, and severe and intense headache, mostly frontal or occipital in its seat. The eyes are suffused and congested, there is great giddiness, and the tongue is furred, except at the tip and at the edges. None of these symptoms distinguish it specially from the onset of some other acute infections, but contemporaneously with the fever, or soon after its appearance, intense pain is felt in the groin, the armpit, or the neck, and at the seat of the pain one or more of the glands will be noticed to be swollen and to be particularly painful on pressure. In the course of 12 hours or even in a shorter time the swelling rapidly increases in size, caused by a periglandular effusion which may be very profuse or only moderate in extent, and the bubo which is thus formed is somewhat doughy to the touch on the surface and of a hard consistence in the deeper tissues. This bubo, with the other signs, is pathognomonic of plague. It is filled with plague bacilli. The bubo varies in size and consists of one or more inflamed lymphatic glands from which exudes a sero-sanguinolent effusion which mats together the neighbouring glands into a hard mass and infiltrates the tissues around, rendering them firm and œdematous. The œdema may be scanty or profuse and in the cervical region it may be so great as to be a serious danger to the patient, and by pressure produce stridulant respiration. In the groin the bubo may reach the size of a man's fist and may extend into the iliac region, affecting the chain of glands in the abdominal cavity and forming a hard tumour to be felt through the abdominal wall. In the axilla the bubo often

occludes the axillary space, and the infiltration may become so extensive and organised as to form a hard mass which may interfere with the respiratory movements or become a dangerous slough. The position in bed is always one which tends to relieve as much as possible any tension on the bubo. Ordinarily consciousness is retained, but even apparently with the most perfect consciousness the intellect seems slow in answering questions, the words or sentences being articulated in a hesitating manner, each syllable being pronounced slowly or the speech is staccato in character and uttered in a hurried and irritable tone. The temperature is not characteristic. It may reach its maximum in a day or two or not until the fourth day. It is of a remittent nature and in favourable cases begins to decline on the sixth and seventh day and reaches the normal on the tenth day. The symptoms usually attain their height on the fourth day. Restlessness, with desire to get out of bed and wander, is often a prominent symptom. Dyspnœa and delirium of a quiet or a noisy nature set in, followed in unfavourable cases by coma and gradual or sudden failure of the heart's action. The pulse, which is soft and easily compressible at the outset, becomes intermittent and dicrotic and often difficult to count, and the patient's extremities become cold and clammy. Recovery usually sets in about the six or seventh day, but no prognosis is safe in the early days of illness. The bubo resolves or more frequently suppurates. By puncturing the bubo even at its earliest stage a small quantity of the gelatinous contents can be sucked out with a sterilised glass pipette guarded at the mouth end by sterilised cotton-wool. If the contents so obtained are then spread out on a glass slide or cover-glass, gently heated as in the ordinary preparation of a microscopical specimen, coloured with carbol fuchsin or gentian violet, and then examined by a $\frac{1}{12}$th oil immersion lens, the field will be seen to be covered with cocco-bacilli or diplo-bacteria, large numbers of them being more deeply stained at the ends than in the centre. No other disease with swollen lymphatic glands presents microbes such as these. Their presence is sufficient to arouse the greatest suspicion at any time, and the material ought at once to be taken to a laboratory where the bacilli can be cultivated and the confirmatory tests applied. When plague is known to prevail in a country the discovery of bacilli by microscopical examination, combined with the clinical features, is sufficient to make the diagnosis of plague a certainty.

In the fulminating, septic, and pneumonic types of the disease in which no buboes may be found, an examination of the blood and sputum for the characteristic bacilli is the chief diagnostic test. In the septic type the bacilli early invade the blood and the patient is prostrated with the intensity and amount of the poison which has penetrated into the system. Besides the common symptoms belonging to all forms of plague this type is characterised by a pallid and apathetic expression and a rapid setting in of extreme nervous prostration, delirium, coma, and death, the patient often suffering from hæmorrhages from the nose, kidneys, or bowels. In the pneumonic type the bacilli are to be detected in the sputum, the disease localising itself at first in the lungs. The symptoms are those of a broncho-pneumonia with much greater prostration. Dyspnœa, cough, and expectoration of a watery fluid tinged with blood are the chief clinical features. The physical signs are moist sounds at the base of the lungs, and the pulse and respiration are rapid, but there is not the same disproportion in their ratios as is observed in acute pneumonia. The patient usually dies on the fourth or fifth day. This type is the most infectious, the sputum teeming with the bacilli; it corresponds with the Black Death of 1348.

The post-mortem characters of all varieties of plague are distinguished by congestions and by small and large hæmorrhages of the internal organs and venous system, and by the presence of plague bacilli in the enlarged lymphatic glands and the serous or sanguinolent exudation around them, in the blood, spleen, liver, bile, urine, peritoneal fluid, and fluid of the brain. It is this universality of the plague bacillus which causes the corpses of persons who have died from this disease to be dangerous and renders it imperative that special precautions shall be taken immediately death takes place to prevent the spread of the infection. A sheet dipped in corrosive sublimate of the strength of 1 in 500 should be wrapped round the body.

THE TREATMENT OF PLAGUE.

A plague epidemic soon dispels any faith in the old methods of curative treatment. Good nursing and stimulants will do much for the patient, but the struggle is between the natural powers of the patient and the weakness or virulence of the microbe. Neutralisation of the toxin and destruction of the plague bacillus without harm to the patient are the rational objects to be aimed at in treating a plague patient and these are not attained by any of the ordinary pharmacopœial drugs. The only known method attempting to deal with the problem is serum-therapy and though Yersin's serum has fallen into disrepute since its failure, or comparative failure, in Bombay yet it appears to me that it is on that system, or some allied system, that we may hope to make any advance in the treatment of plague. An explanation of the success of Yersin's serum in the few cases in China, where in 21 cases it gave a mortality of 7 per cent., and its failure in Bombay may possibly be due to the different methods employed in the preparation of the Chinese serum and the Bombay serum. At least that is the view of the Pasteur Institute and until it is otherwise proven may, I think, be accepted. The Chinese serum was obtained from the horse by injecting it with living and virulent cultures of the plague microbes, but owing to the dangers attendant on this method the Bombay serum was prepared by injecting dead cultures. Of late a return in part to the original method of preparation has been made and the serum as now supplied from the Pasteur laboratory is obtained by injecting horses, first of all with dead cultures and then with living and virulent cultures. This is the serum that was used in the recent outbreak of plague at Oporto. Dr. Calmette and Dr. Salimbeni have published the result of their investigation into the efficacy of this serum as ascertained by them in the treatment of patients at Oporto, and there can be no doubt, as the statistics stand, that the results are highly in favour of the value of the serum. This statement, however, requires qualification, owing to the fact that the comparison is not made between patients treated in hospital with serum and patients not treated with serum, but between patients treated in hospital with serum and patients treated at home without serum. The experiment is accordingly not under the same conditions, but the results are so dissimilar that it is impossible not to give the serum considerable credit for the contrast. It appears that out of 142 cases treated with the serum in hospital 21 of the patients died, which is equal to a mortality of 14·78 per cent., while out of 72 cases treated at home without serum 46 of the patients died, which is equal to a mortality of 63·72 per cent.—i.e., the mortality in hospital was five times less than the mortality at home. Success seems to have been more certain when the serum was used in large doses and when employed intravenously; thus the best results were obtained when, at the beginning of the illness or as soon as the patient came under observation, an intravenous injection of 20 cubic centimetres of the serum was given followed by two subcutaneous injections of 40 cubic centimetres each in the first 24 hours and by subcutaneous injection of from 10 to 20 cubic centimetres, or 40 cubic centimetres on the next and subsequent days until the temperature fell to normal, and even for two days afterwards. No ill results ensued from these injections further than an occasional erythema and articular pains which were no more intense after the intravenous than after the subcutaneous injections.

PREVENTIVE MEASURES.

Of preventive measures for the medical attendant, the nurse, and the relatives who may have close association with plague patients the most important is Haffkine's plague prophylactic. Of preventive measures for a country, in addition to those recommmended by the Venice Convention and the destruction of rats, the most important is that its medical men, especially its port health officers and medical officers of health, should be able to recognise plague when they see it, and for this purpose I would recommend that the same methods be adopted in England as in Germany—viz., that under the auspices of the Government there should be instituted a course of instruction on plague to be attended in batches by the medical officials of the country.

Gloucester-place, W.

BRISTOL EYE DISPENSARY.—The annual meeting of the subscribers and friends of the Bristol Eye Dispensary was held on April 3rd under the presidency of Mr. P. J. Worsley. The medical report showed that 1762 patients had been treated during 1899, against 1710 in 1898. The financial statement showed a favourable balance of £8.

A CASE OF SPONTANEOUS RUPTURE OF THE HEART AND HÆMORRHAGE INTO THE PONS VAROLII.

BY PERCY T. GOODMAN, L.S.A. LOND.

ALTHOUGH cases of rupture of the heart have on various occasions been recorded, this lesion is yet sufficiently rare to render apology unnecessary for another account of its occurrence. In the following case the concomitant hæmorrhage into the pons Varolii adds greatly to its interest, such a coincidence being extremely unusual, if, indeed, it has ever been previously chronicled.

On the afternoon of March 21st, 1900, a woman, who had appeared to be quite well in the morning, went out in company with another woman. The day was the anniversary of her first husband's death and also of her second wedding, so in order to celebrate the double event they entered a public-house and had some brandy. She had not been in the habit of drinking spirits and was said to have been always a sober woman. On returning home she complained of feeling unwell and of having lost the use of the right side of her body. I was called to see her at 5 P.M. and found her in a state of profound coma. Her breathing was stertorous, her face was flushed, and her pupils were strongly contracted and insensible to light. The conjunctival reflex was quite abolished. The right side of the face seemed flattened, but there was no means of testing the limbs for paralysis. A strong smell of alcohol emanated from the mouth. The pulse was full and of very high tension. On auscultation, owing to the loudness of the breathing, the heart could only be listened to with difficulty, but there seemed to be a modification of the first sound resembling a faint murmur. Every available means of rousing her was tried without success, and in view of the possibility of narcotic poisoning a hypodermic injection of one-fifteenth of a grain of apomorphine was administered, producing immediate vomiting, the vomited material consisting of partially digested food and smelling strongly of spirits. Death occurred at 10 P.M., and the pupils were then seen to be moderately dilated. The woman had suffered from rheumatic fever some years before and had for several months complained of a cough. She had had no children, and there was no history of miscarriages or anything to lead to a suspicion of syphilis.

At the post-mortem examination a hæmorrhage was found in the substance of the pons Varolii chiefly on the left side, where it was as large as a walnut and was beginning to extend into the cerebellum. The arteries of the brain appeared to be quite normal to the naked eye and there was nothing to denote injury to the cranium. Early tuberculosis was found at the apices of both lungs. On opening the pericardium, which was not greatly distended, about six ounces of blood were seen within the sac, and on the anterior surface of the left ventricle a rupture was discovered two and quarter inches in length, terminating below over the septum near the apex. This rupture was incomplete along its upper two inches, where it involved the outer part of the ventricular wall only, and might be more accurately described as a series of short rents in a line with one another running obliquely downwards from left to right parallel to the muscular fibres. The edges of these rents were ecchymosed. In the lowest quarter inch the rupture was complete, opening into the left ventricle and through the septum into the right ventricle, being sufficiently large to allow of the passage of a probe into those cavities. The coronary arteries were apparently normal and there was no evidence of embolism or abscess. The heart was quite empty and the valves were all perfectly healthy. On section the heart muscle was somewhat paler than usual, but there was no macroscopic sign of fatty degeneration. Along the rent the section presented an appearance strongly resembling the musculi pectinati of the auricular appendages. There was a good deal of congestion in the other organs, which were otherwise normal.

Spontaneous rupture of the heart is described as being an affection almost exclusively of advanced age, generally immediately traceable to some muscular effort or mental disturbance, and men are said to be more liable to it than women. In this case the patient was a woman of middle age, and there appears to have been no extraordinary manifestation of muscular activity which could have resulted in the lesions described. I do not think that the strain of vomiting was great enough to produce a rupture even in a very much softened heart. People who saw the patient before the attack state that she did not seem to be at all excited; but it is possible that the conflicting emotions aroused by the recollection of her second wedding day and of her first husband, together with the unaccustomed beverage of which she partook, gave rise to a state of mental perturbation great enough to be the originating factor of the lesions which caused her death. That there were no symptoms such as præcordial pain may be accounted for by the supposition that the hæmorrhage into the pons Varolii was the first thing to occur, resulting rapidly in complete unconsciousness, although, on the other hand, the alteration in the first heart-sound (the valves being healthy) would suggest that some change had already taken place in the cardiac muscle. It would seem in this instance that some degenerative process not obvious to the naked eye had been going on both in the heart muscle and in the arteries—possibly as a result of the previous acute rheumatism—which led to their almost simultaneous rupture on the blood-pressure becoming suddenly raised. The position of the rent is of great interest, opening as it did into both ventricular cavities and involving a small portion of the septum. Another point worthy of note is that the similarity of the symptoms of hæmorrhage into the pons Varolii with those of opium poisoning was heightened by the dilatation of the "pin-point" pupils at death, showing that this may occur equally in the one case as in the other.

Brick-lane, E.

EXPERIMENTS ON INTESTINAL SUTURE.

BY WALTER EDMUNDS, F.R.C.S. ENG.,
AND
EWEN C. STABB, F.R.C.S. ENG.

(From the Brown Institution.)

THE following experiments were made to help in determining the best method of circular suture of intestine.

The methods contrasted were by use of (1) Halsted's inflated rubber cylinders; (2) Murphy's button; and (3) Laplace's intestinal forceps. Seven experiments by each method were made on dogs, with the result that all the seven dogs in which the intestine after complete division was re-united circularly by the aid of Halsted's cylinders recovered; of the seven experiments with Murphy's button only five were successful; and of the seven with Laplace's forceps only four were successful. The failures were all due to non-union.

As far, then, as our actual results go the verdict is entirely in favour of Halsted's inflated rubber cylinders. This coincides with the opinions which we formed while making the experiments. The effect of the inflated cylinder is to push back the mucous membrane which otherwise always everts itself so much as to interfere materially with the suturing of the outer coats and the adaptation of the peritoneal surfaces. The cylinder also prevents the escape of the intestinal contents, thus dispensing with clamps of any kind.

Murphy's button does not appear to us to be trustworthy unless external sutures are applied, and this in our experiments we did not do; if this is done the time of the operation is lengthened and the instrument is in some degree reduced to an apparatus for facilitating the application of sutures. It may here be mentioned that the animals did not recover so quickly after the use of Murphy's button as after Halsted's operation. After the latter they passed formed stools on the next day, whereas with Murphy's button only liquid stools were passed for two or three days, and danger cannot be considered to be over till the button is passed, which occurred on the third or fourth day.

With respect to Laplace's forceps we must say that we do not like the instrument. It certainly afforded us no aid in suturing and as above stated three out of the seven junctions made with its use failed.

The first of the seven experiments with Halsted's cylinders was made not by us but by Mr. C. A. Ballance, who kindly allows us to include it in our series.

Some of the specimens obtained may be seen in the museums of the Royal College of Surgeons of England and of St. Thomas's Hospital. When fresh they showed that the adhesions present in the earlier days after operation to a great extent disappear later.

With respect to human surgery we may here express our opinion that the difference in the thickness of the muscular coats in the intestines of dogs and men does not invalidate the conclusions above suggested. In man we recall three operations for the excision of malignant growth of the great intestine. In one case re-union was attempted (by one of us) by simple suturing and failed; in another re-union was attempted (by one of us) with Halsted's cylinders and succeeded; and in a third re-union attempted by Murphy's button with an external ring of sutures was followed by failure, but as a gauze plug had been carried down to the seat of junction only a fæcal fistula resulted which in a short time closed spontaneously.

References.—Halsted: Inflated Rubber Cylinders for Circular Suture of Intestine, Philadelphia Medical Journal, 1898. Laplace: A New Forceps for Intestinal Anastomosis, Annals of Surgery, March, 1899.

GUNSHOT WOUND OF THE HEAD; PERFORATION OF THE BRAIN; RECOVERY.

BY DAVID DURRAN, M.B., C.M. GLASG.,
SURGEON-CAPTAIN, 1ST CAITHNESS VOLUNTEER ARTILLERY.

ON March 2nd, 1897, I was called to the gun-room of the drill hall, where practice with the Morris tube was going on, to see a lad who was supposed to have been shot in the head. I was told that this lad, who had been incautiously bending forward to see the result of the shot and had thus got his head into the line of fire, had suddenly fallen down and was lying helpless. On arrival at the hall I found him on his right side, unconscious and breathing heavily. There was blood oozing from a wound on the head over the left parietal eminence. Brain matter was also observed on the edges of the wound. Examination with a probe revealed a small opening through the skull about three-eighths of an inch in diameter, the bony side being slightly irregular. The patient was conveyed on a stretcher to his house. By this time there was complete insensibility. The pupils were widely dilated and did not react to any stimulus. The pulse was 50 and the breathing was laboured. There was also an effusion under the occipito-frontalis. No exit wound could be discovered. About 36 hours after Dr. A. Asher, who was associated with me in the treatment of this case, discovered a small, hard object slightly moveable under the scalp about two inches above the right ear. It was cut down upon and when extracted was found to be the bullet crushed out of shape. There was a small opening through the skull of a triangular shape and situated about half an inch further up than the spot where the bullet lay. The bullet had penetrated the skull through the left parietal bone and passing through the brain had pierced the right parietal bone about two inches above and slightly behind the external auditory meatus, where, its force being almost spent, it was unable to make its exit through the scalp but lodged itself between the pericranium and the bone in the manner which I have described.

The history of the case is a history of gradually returning consciousness and complete recovery in two months. The symptom which persisted longest was blindness of both eyes with widely dilated pupils. There was very little rise in temperature, seldom over 100° F. The pulse was slow, ranging from 50 to 54 for the first fortnight when it rose to 60 and about a week after it reached 64. There were restlessness and sleeplessness for the first 10 days. The blindness persisted for three weeks with dilatation of the pupils. Light had so little effect on them that ophthalmoscopic examination could easily be carried out at all times. Little change was noticed in the retinal vessels. After the patient was able to move about it was remarked that in passing an object on the right hand he kept away over two feet from it, but if the object were on the left hand he invariably brushed against it in passing. The effusion under the occipito-frontalis which was very large became gradually absorbed. This effusion, which was slight at first, increased greatly within 24 hours and no doubt lessened the pressure in the brain-vessels. The bullet had evidently passed through the ascending parietal convolution on the left side and through the angular gyrus on the right side.

At the present time, three years after the injury, the exit wound through the skull can easily be made out by a well-marked depression above the right ear but the entrance wound is not so easily found. The sight is as good as it was before the accident and there does not seem to be any permanent injury to the brain.

Thurso, N.B.

INTESTINAL OBSTRUCTION CAUSED BY MECKEL'S DIVERTICULUM AND RELIEVED BY OPERATION.

BY HENRY JOHN MACKAY, M.D. EDIN.,
SURGEON TO THE DEVIZES COTTAGE HOSPITAL.

A YOUNG woman of tuberculous family and with some consolidation of one apex was admitted into Devizes Hospital on Oct. 27th, 1897, complaining of severe abdominal pain and vomiting. The pain had commenced two days before, half an hour after dinner, and had continued with slight remissions up to the time of her reception. The pain was followed six hours later by vomiting, first of food, then of bile, and later and at the time of admission of a dark greenish-brown fluid, offensive in odour, but in which no actual fæcal matter could be detected. She had suffered from occasional bouts of pain for some months previously to the present attack and had attributed this to indigestion. There had been no epigastric tenderness and she had never brought up blood.

On admission the patient's temperature was 98·8° F.; the pulse was soft and regular and 126 in frequency; the breathing was 20, chiefly costal. The skin was warm and slightly moist. No collapse was present. There was no tenesmus and no blood was passed. Rectal examination was negative. The patient lay on her right side with the limbs semi-flexed. The pain was severe, but not absolutely constant, there being occasional remissions of 20 minutes' duration. Vomiting of the character already described was frequent and afforded her no relief. An enema brought away a few hard masses. The urine was diminished in quantity. It was found on examining the abdomen that there was some fulness in the umbilical region below and to the right of the navel. The flanks were relatively flat and there was no distension in the region of the colon. Vermicular movement could be seen passing across the lower part of the abdomen, and observation of this led to the opinion that it concerned a coil of small intestine. Palpation revealed deep tenderness in a spot to the right of the navel. The distended area was felt to consist of tense coils of small intestine. A diagnosis of complete obstruction of the small intestine was arrived at. Of the nature of the stoppage no opinion could be formed except that the physical signs of intussusception were absent. As to the locality of the obstacle, from the slight degree of shock present, the appearance of the abdomen, and the character of the vomit, the opinion was hazarded that the obstruction was probably in the lower half of the ileum. On making an exploratory incision on the following day several tense coils of small intestine presented. The caput cæcum coli was sought for and was found to be empty. So, too, was the adjoining lower end of the ileum. Tracing the latter upwards the gut led to a tight constriction. A cord-like structure lying deeply at the floor of the abdominal cavity bound down beneath it a knuckle of small intestine. The latter was situated roughly about 20 inches from the caput cæcum. The cord was followed upwards and was found to pass deeply and to the left to an attachment on the transverse meso-colon at a short distance from its spinal origin. This attachment was divided between ligatures and the bowel was released. The cord was then traced downwards and was found to originate from the wall of the ileum, a short distance above the ileo-cæcal valve. No appearance of patency could be made out in the diverticulum at a distance of an inch from its origin and accordingly it was divided here between ligatures. The cross-section of the removed portion showed no trace of a central tube. The distended coils of bowel

quickly subsided after division of the constriction and the abdominal wound was therefore sutured and the patient was placed in bed. Recovery took place without further symptoms. The vomiting ceased, the bowels were moved on the following day, and the sutures were removed on the eighth day. On examining the patient two years later the cicatrix was found to be firm and linear without any stretching or hernia.

As to the method of strangulation in this case no difficulty can arise. It illustrates strangulation of a loop of bowel beneath a tightly adherent diverticulum, a condition of things which, according to Mr. Treves, is frequently met with. What is not so clear is whether the detention of the knuckle of gut had been of some duration—chronic partial obstruction, i.e., becoming suddenly complete and acute—or whether the incarceration was recent and the obstruction acute and complete from the first.

Devizes.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum allorum tum propriis collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

BRADFORD ROYAL INFIRMARY.

TWO CASES OF MEDIASTINAL GROWTHS WITH SECONDARY DEPOSITS IN THE SPINAL CANAL CAUSING PARAPLEGIA.

(Under the care of Dr. H. J. CAMPBELL and Dr. H. C. MAJOR.)

CASE 1.—A man, aged 23 years, was admitted into the Bradford Royal Infirmary on March 29th, 1898, under the care of Dr. H. Johnstone Campbell. The symptoms began nine weeks before and consisted almost entirely of pains until March 25th. The pains he described as occurring in the left side of the chest, in the loins on the right side, in the back between the shoulders, in the head, and, indeed, all over the body. The pain in the chest was made worse by stooping and by drawing a deep breath, but not by taking food; it was very violent and took all the strength out of him, and induced him to keep in bed most of the time; still he was quite able to get up and to walk about when necessary. Four days before admission he became unable to do so owing to weakness in the legs, which, he said, would no longer support him. Cough had been a symptom all the time but not hæmoptysis; he had not noticed any loss of flesh. The case, therefore, had been a very obscure one all along; the pains were so widely scattered without objective signs to account for them; the weakness in the legs alleged by the patient was therefore looked upon as fictitious, and he was sent into the infirmary as a case of hysteria. The family history was as follows. His father and mother lived to over 70 years of age. He was the youngest of 14 children; the eldest was an albino, the sixth died lately from "enlargement of the liver, consumption, and dropsy." There were four children living besides himself.

On examination on March 30th (the sixth day counting from the onset of weakness in the legs) the limbs were found to be wasted, but the face was not thin and the patient had not a particularly anxious expression. He could not move himself or sit up in bed owing to loss of power in the iliopsoas muscles, he could draw up his legs feebly, and he needed a good deal of help from the nurses. Knee-jerks were exaggerated; there was double ankle clonus; plantar, cremasteric, abdominal, and epigastric reflexes were all absent; the pharyngeal reflex was present. Incontinence of fæces occurred on March 30th. The leg muscles reacted unduly to weak faradaic currents; galvanic reactions were not ascertained. Sensibility to touch was normal everywhere; strong faradaic currents, however, failed to cause pain. His chief pain was in the third left intercostal space. The spinal column was regular, freely mobile, and had no tender spots. The arms, cranial nerves, and cerebral and mental functions were unaffected. On examining the chest it was unexpectedly discovered that there were distinct physical signs of intra-thoracic growth. On the right side anteriorly there was dulness from the apex to the third rib, and there was complete absence of breath sounds there; behind no definite abnormal signs were to be discovered at this apex. The manubrium was somewhat dull to percussion and was seen to rise slightly at each heart beat. The lower part of the neck looked full and the superficial veins over the neck, thorax, and abdomen were a little dilated. The heart apex was in the nipple line and, except for uncovering of the conus arteriosus, the condition was normal. The pulse was 120.

On April 1st (the eighth day) the knee-jerks were very feeble and ankle clonus had disappeared. On the 2nd (the ninth day) the patient complained of his legs being numb and stiff. Examination showed complete cutaneous tactile anæsthesia in the legs and in the trunk up to the seventh intercostal space; hard pinching of the calf muscles produced a sensation but no pain. Over a corresponding area motor power was completely lost and all reflexes were abolished. The bladder was distended and retention of urine had set in. There was incontinence of fæces, digital examination a few days later proving that there was complete paralysis of the sphincter ani. For the next week he suffered from extreme thirst and there was an excessive secretion of urine, about 100 ounces being drawn off daily. There were soon signs of cystitis but under local treatment the urine became clear and acid and kept so. In the chest dulness increased at the right apex anteriorly and distant bronchial breathing appeared; the superficial veins became more dilated. Tenderness in the spine made its appearance on April 3rd (the tenth day) and was found over the fourth, fifth, and sixth dorsal spines and greatest over the middle one of these; movements of the back were now attended with great pain here. Girdle sensation was occasionally felt in the sixth intercostal space. He had no bedsore. The temperature ranged between 99° and 100° F. The pulse was usually rapid, often 140 to the minute. On April 9th the patient sank and died from exhaustion—that is, 16 days from the earliest signs of paralysis or a week from complete loss of sensation and motion in the legs.

Necropsy.—At the post-mortem examination the body was found to be wasted. On making the posterior median incision masses of soft white tumour appeared growing up around the vertebral spines in two places: (1) around the third dorsal spinous process and leading to spontaneous fracture of the sixth; and (2) around the eleventh and twelfth dorsal spines. On removing the laminæ the canal was found to be choked with growth at both situations, the spinal cord was compressed and the bodies of the vertebræ were so soft as to be easily cut with a knife. On opening the chest there was a large mass of growth in the anterior mediastinum, around the great vessels, and extending into the apex of the right lung for about three inches downwards; it had not quite reached the pleura on the posterior surface. In addition, a mass of the size of a walnut was found in the tail of the pancreas, and the lumbar glands were largely converted into soft milky growth. Each of the two masses in the spinal canal was not obviously continuous with that in the body cavity in front of it. The mucous membrane of the bladder was sloughing extensively and at one place a perforation had occurred with adhesion to the bowel, in others the peritoneal coat only was intact. There was much congestion of the vessels in the pelves of the kidneys. The growth was white in colour and soft; microscopically it proved to be a lympho-sarcoma.

CASE 2.—A man, aged 32 years, was admitted into the Bradford Royal Infirmary on July 15th, 1898, under the care of Dr. H. C. Major, then senior physician to the hospital. The patient was sent in by his private medical man as a case of "phthisis and paraplegia." Having the other case in mind, this combination at once suggested the idea that perhaps it was really a growth giving rise to the spinal and pulmonary conditions. The physical examination and history of the case soon confirmed this view. The illness had lasted seven months, pains in the chest and cough having been until recently the chief complaints. This pain had been situated between the shoulders, more on the left side, going into the clavicle and down the left arm; was extremely sharp, like a knife, stabbing and throbbing, and was worst at night for the first hour after going to bed. When he held his breath the pain did not lessen, but

coughing made it excessively severe. At first the pain came on every two or three days, but it had been almost constant for the last three weeks. He had been away from work for a month. Two weeks previously (on July 2nd) the legs had felt weak and numb and he had staggered in walking. He now lost power of holding his urine, which continually dribbled away; there was also numbness in the left arm. The weakness gradually increased and on July 8th, six days later, paralysis of motion and loss of sensation were complete below the waist. The urine had to be drawn off regularly by catheter and there was incontinence of fæces. A week later (July 15th) he was admitted to hospital. From the beginning of 1898 the patient had had a cough with yellow, frothy expectoration which never contained blood; the appetite had not failed. He had sweated at night during the month previous to admission and had evidently lost flesh. Three or four years ago he had acquired a chancre, which was followed by a sore-throat.

On examination, on July 16th, the patient looked extremely ill. He was very thin, pale, and had an anxious expression, and the perspiration stood in beads on his brow. Power was completely lost in both legs and in the muscles of the trunk up to the fourth rib. There were retention of urine and incontinence of fæces. The knee-jerks were absent and there was no ankle-clonus. The plantar reflexes were present and were somewhat excessive, especially on the right side; they were accompanied by active cremasteric contraction, although stimulation of the inner side of the thigh would only produce a feeble cremasteric reflex. Abdominal and epigastric reflexes were not elicited.

Tactile and thermal sensations ceased abruptly at the level of the fourth rib. The sensation of pain could be elicited much further down—i.e., on the right side to the lower border of the eleventh root zone, on the left side to that of the twelfth, clearly defining the limits of these cutaneous areas. Pain and numbness were experienced in the left arm. The spinal column was tender to percussion from the second to the fifth dorsal spines, but there was no undue prominence to be seen. The cranial nerves and cerebral and mental functions were unaffected. On the left side of the chest anteriorly expansion was defective, the percussion note was high-pitched, and breath sounds were very faint; posteriorly, at this apex, the breath-sounds and vocal resonance were diminished. At the base dulness, complete silence, and absence of vocal fremitus and resonance were to be found. Exploration for fluid here gave a negative result. At the right apex the vesicular murmur was very loud, contrasting with the other side, but there were no abnormal signs in this lung. The manubrium sterni was rather dull to percussion. The heart was normal in its sounds and position. The tongue was furred, there was no special thirst, the temperature was raised, and a bed-sore threatened to form over the sacrum.

Three weeks after admission (on August 10th) the signs in the left side of the chest had increased; there was dulness now at the apex in front and bronchial breathing was heard in the first and second spaces; whilst behind there were general dulness and loss of breath sounds. On August 19th bronchial breathing could be heard down as far as the third intercostal space; below this there was pleuritic friction. Great enlargement of the liver was present and large nodules could be felt over its surface and edge. The abdominal veins were distended and the legs were œdematous, but there was no ascites. On August 23rd the left pupil was contracted and the right was dilated. The patient had pain in the left arm and this limb was found to be weak. Before this he had suffered little actual pain, but rather great discomfort and weariness. There had been hectic fever and rapid loss of flesh. His cough had been very troublesome but he had had no hæmoptysis. Retention of urine lasted two weeks and then gave place to paralytic incontinence; towards the end it collected in the bladder again, needing the passage of a catheter occasionally. Incontinence of fæces was constant. The left cremasteric reflex disappeared but otherwise the reflexes remained as at first. He had continual diarrhœa and a large bedsore formed over the sacrum and extended to the bone. On August 26th severe pain in the neck was complained of, and on the 30th he sank and died from exhaustion six and a half weeks from the day of admission.

Necropsy.—At the post-mortem examination the body was found to be extremely wasted. On making the posterior median incision masses of soft white growth appeared, growing up around the spines at the top of the dorsal region. The second spine was surrounded and the interval between the first and second was occupied by the growth. There was no other deposit in the spine but this. Further dissection and removal of the laminæ showed that the tumour could be traced into the left side of the thoracic cavity, passing between the transverse processes of the first and second dorsal vertebræ, which processes had become soft and decalcified. It had passed through the intervertebral foramen on the left side and invaded the spinal canal compressing the cord. Dr. F. W. Eurich, who kindly examined the specimen, reported that the cord was softened at the level of the second dorsal vertebra and its internal markings were lost there; an inch lower down a greyish translucency was seen in the right pyramidal tract but not in the left; the lumbar cord seemed normal. Microscopically the lumbar enlargement showed a normal condition although the loss of knee-jerks and paralytic incontinence had suggested some affection of the lumbar centres as in Case 1. On opening the chest a growth was found in the mediastinum at the root of the left lung, surrounding but not occluding the left bronchus. The left lung was solid and universally adherent to the chest wall, most firmly so above. On section the upper two thirds were found to be converted into a mass of growth, while the lung tissue at the base was solid, airless, and slate-grey in colour. Behind this lung, in the first intercostal space, close to the spine, was the secondary deposit, the extension of which has been already described in the examination from the dorsal surface. The liver was extremely large and full of big round masses of growth which could be cleanly shelled out from the substance of the organ; its weight was six pounds two and a half ounces. The spleen was enlarged and the heart was small and flabby. The bladder mucous membrane was a little injected, but otherwise it was in good condition. The lumbar glands were not affected. The tumour was white in colour and soft; on microscopic examination it presented the characters of a lympho-sarcoma.

Remarks by Dr. HOWARD GLADSTONE.—These cases of neoplasms growing both in the spinal canal and mediastinum came under observation during the time I was house physician to the Bradford Royal Infirmary, and I am indebted to the kindness of Dr. Major and Dr. Campbell for permission to publish their cases.

Mediastinal growths being not uncommon in the district I was able to observe 11 cases among in-patients in 18 months and became much interested in their diagnosis. Correctness in this, although leading to no beneficial treatment, is really important. It is a serious mistake to diagnose a case as fibroid phthisis, chronic bronchitis, or pleurisy with effusion when it is really one of intra-thoracic tumour, shortly to prove fatal; and it is such chronic pulmonary diseases that are most likely to be mistaken for it. Aneurysm of the aorta must of course be excluded by careful examination of the circulatory system. The resemblance, however, is not very close, and the above cases, and, indeed, nearly all those which I saw, did not in the least simulate the clinical picture of a case of aneurysm.

Persistent pain in the chest, often situated between the shoulders, stabbing and throbbing and preventing sleep, is often the earliest symptom: pain, with such characters, occurring in a person at a comparatively early age and not proceeding from the stomach, is suggestive of some serious deep-seated disease in the thorax. Defective air entry into a portion of the lungs from pressure is usually the earliest physical sign; the percussion note in the same spot may be at first high pitched and later may be dull. For example, at one base there may be loss of breath sounds—total silence—and hyper-resonance of the percussion note, almost suggesting pneumothorax; a few weeks later there will be dulness at that base, but yet no fluid may be found on exploration. Post-mortem examination here will prove that pressure on the root of the lung by a growth first obstructed the bronchus and led to a relaxed condition of the lung tissue at the base; and, secondly, chronic venous congestion, bronchiectasis, and perhaps invasion by processes of the tumour led to consolidation. In such a case the interscapular regions should be carefully percussed in the early stages for signs of consolidation at the root of the lung and the presence of slight friction should be watched for there.

Again, pressure on the upper bronchus gives signs that must be distinguished from early phthisis. At the affected apex anteriorly expansion is defective, the percussion note is shallow, and the breath sounds are almost absent or feebly bronchial; but crepitations do not appear after coughing,

there are no tubercle bacilli in the sputum, and pain in the chest may be a prominent symptom. Other signs of mediastinal tumour should then be looked for, such as some dulness over the manubrium sterni and localised œdema and enlargement of veins in the arms, neck, or surface of the trunk.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on April 9th, Dr. F. T. ROBERTS, the President, being in the chair.

Dr. LEONARD GUTHRIE exhibited a case of Myotoma Congenita (Thomsen's Disease). The patient was a boy, aged ten and a half years, and he had been brought to the hospital on account of the awkwardness of his movements. The hands exhibited a peculiar condition of tonic spasm somewhat resembling tetany. The wrists also were flexed towards the ulnar side and the elbows were semi-flexed. When asked to grasp the observer's hand he did so with apparent effort and could not let go easily. Sometimes he could not take hold of an object without first pulling his adducted thumb outwards with the fingers of his other hand. For this reason he had a difficulty in feeding himself at times. All the muscles of the upper extremities were in some degree affected. Similar transient spasticity affected the lower extremities. His gait when starting was jerky and he had a difficulty in getting upstairs. This condition of tonic spasm varied greatly. It was always more marked after rest and lessened after exercise and when his attention was distracted from himself. The spasm persisted during sleep. He complained that his legs and arms always felt stiff but he had no pain. The case seemed to be an early stage of Thomsen's disease although the family history of the complaint was wanting.—Dr. J. A. ORMEROD did not think the case was quite a typical one of Thomsen's disease. There was no enlargement of the muscles nor were the electrical alterations present, though the spasm was worse after rest. He referred to a somewhat similar case which like this had not manifested itself quite early in life. He was rather inclined to regard the case as one of cerebral diplegia or Little's disease.—Dr. T. D. SAVILL asked what was the effect of cold on the spasm. He referred to a somewhat similar case which had been brought before the Clinical Society of London some years back in which the spasm was brought on by exposure to cold and could be relaxed by warmth.—Dr. ROBERT MAGUIRE hesitated to regard the case as one of Thomsen's disease, nor did he think it was Little's disease. It was difficult to name such cases but he believed the explanation of them to be a lack of higher cerebral control which left the spinal centres unrestrained. There was certainly no organic disease and the patient would probably get better after puberty, when his cerebral control became more developed.—Dr. GUTHRIE, in reply, did not wish to speak positively about the diagnosis, nor could he speak definitely about the electrical reactions. The spasm was a little more marked after cold. In support of the suggestion that it was in some way connected with deficient cerebral control the spasm seemed to be a trifle more marked when the boy's attention was taken away from the contracting muscles.

Dr. T. D. SAVILL showed a case which presented a curious Pigmented Skin Lesion which went on to Vesiculation, not belonging to any known type of disease, occurring in a woman, aged 24 years. She had come under his care for severe headache associated with marked visual error. One lung was also the seat of tuberculosis. For eight or nine years the skin lesions in question had appeared in succession on different parts of the limbs and trunk. Each lesion was preceded by a smarting pain followed by the appearance of an ecchymosis which subsequently swelled up and became an erythematous area varying in size from a bean to a half-crown. One or two days later a vesicle or bulla containing dark-brown serum would appear on the top of the swelling. These lesions appeared in succession at irregular intervals of a few days. One or more generally came after a severe attack of headache. She had never more than two or three at one time, but at the present moment she had some 10 or 12 in different parts of the body showing different stages of the eruption. The patient was also the subject of leucodermia and in one or two instances the bullous lesion appeared in the centre of a patch of leucodermia. The condition resembled hæmorrhagic pemphigus in some respects, but it was probably a neurosis.—Dr. ALFRED EDDOWES suggested that the case was one in which there was a tendency to bruise too readily, and he referred to a case which he had seen some years ago of a woman who bruised so readily that she had a ring of bruises round the waist where her petticoats were tied. A week or so later she died suddenly, and as she was found to be covered with bruises it was thought that she had been beaten but this was not so.—Dr. SEYMOUR TAYLOR suggested examining the skin lesion for bacilli. He would like to know whether it contained tubercle or other bacilli. If so the case might be an aberrant tuberculosis of the skin.—The PRESIDENT remarked that although he had had a large experience of tuberculous skin lesions he had never seen anything tuberculous like this. They ought to avoid attributing too many things to tubercle.

Mr. E. MUIRHEAD LITTLE exhibited a case of Late Rickets. The patient was a girl, aged 17 years. She was well until she was five years of age, when knock-knee appeared. When seven years old she had to take to crutches. She was said to have broken both thigh-bones, the one six and the other five years ago. When first seen, in October, 1899, her length in the recumbent position was 44 inches. The head and ribs showed signs of rickets. The lower end of the radii and ulnæ were much enlarged. There was cross-legged progression because the shafts of the femora were very much curved forward and outwards; the tibiæ were normally straight. On one knee Macewen's operation had been performed and the bone, instead of being very hard, had proved to be so soft that a mallet was scarcely necessary. Skiagrams showed the bones to be unusually pervious to x rays, as compared with those of normal bones. The quantity of calcium present in the urine was less than half the normal, otherwise the urine was normal. Similar cases recorded by Dr. F. G. D. Drewitt and Mr. H. H. Clutton were referred to. The marked enlargement of the epiphyses in these cases distinguished them from so-called rachitis adolescentium.—Mr. T. H. KELLOCK thought that this case differed altogether from rickets as met with in childhood. Possibly it might be an example of the condition which had been described under the term "late rickets," but personally he would prefer to look for some disease affecting the whole skeleton to explain all the symptoms in this case. Here it was the shafts and not the epiphyses of the long bones which were so much affected that they were markedly curved and distorted. In his belief only mollities ossium or fragilitas ossium, or a combination of the two, could explain the fracture of both femora. Rickets did not give a history like that. Moreover, at the operation the bones were so soft that they could be easily cut through by a chisel. He referred to a case resembling this in which an attempt to treat a fracture by putting it upon splints for five or six months had not resulted in union. Shortly after the patient had broken both femora by turning in bed. The mother and sisters of the same patient had both broken their bones. Those cases, like the one before them, ought to be regarded as one of the two diseases he had mentioned.—The PRESIDENT remarked that the case in some respects certainly resembled rickets and the bone ends were certainly enlarged. The changes in the chest were not such as were present in early rickets, but these were usually absent in the disease known by the term "late rickets."—Mr. LITTLE, in reply, remarked that the idea of rickets only affecting the epiphyses was a new one; the whole bone was really involved. Fracture also was common enough, though it was of the greenstick kind in rickets. This patient had never had any pain. He had only used the name "late rickets" because the case resembled that more than anything else.

Dr. H. A. CALEY exhibited a case of Abdominal Aneurysm occurring in a man who had had syphilis 16 years ago. He came under observation owing to a varicose condition of the veins of the left leg and thigh. There was a tumour with marked expansile pulsation in the umbilical region and extending along the course of the right common iliac artery. The sac appeared to have originated in the abdominal aorta near the bifurcation and to have involved both common iliacs, the right more than the left. No pulse could be felt in the right external iliac and femoral arteries, but there was exaggerated pulsation along the course of the left external iliac which suggested some associated dilatation of the vessel.

The left femoral pulse was unaffected. With absolute rest, restricted diet, and large doses of potassium iodide the pulsation had much diminished, the tumour was more solid, and the distension of the veins of the left leg had almost disappeared. The chief points of interest were the absence of pain, the considerable vertical extent of the arterial lesion, and the marked improvement under appropriate treatment and strict diet.

Dr. ALFRED EDDOWES showed a case of Psoriasis and Osteo-arthritis occurring in the same patient, a married woman, aged 31 years. There was no history of rheumatism or gout in the family. The outbreak of psoriasis commenced 17 years ago simultaneously with the appearance of menstruation, a coincidence not uncommon. Five years ago she suffered a good deal of worry and mental strain, and four years ago the enlargement of the joints had commenced. He showed photographs illustrating a similar combination of disease in a male patient, aged 33 years. He believed there was an undoubted connexion between the rheumatic diathesis and psoriasis.—Dr. EDDOWES also exhibited a youth suffering from Simple General Ichthyosis in which he intended to try the effect of thyroid gland.—Dr. ERNEST KINGSCOTE referred to a case of ichthyosis, universal excepting the face and hands, and of a more severe degree than that before the society. The patient was placed in a continuous bath and one and a half grains of thyroid extract were given per diem, and in three weeks the skin had become quite normal. It was kept healthy by Turkish baths and when last seen the patient had had no relapse.

Dr. ROBERT MAGUIRE showed a man, aged 45 years, the subject of Diver's Paralysis. Eight weeks ago he was diving in 160 feet of water when his air-tube became entangled, and on severing this he had come to the surface of the water so rapidly that he had shot four feet above the surface. The pressure of the depth when he was working was 90 lb. to the square inch or six times that of the atmosphere; and consequently the sudden relaxation of pressure was very great. Gradual relaxation did not produce the disease, but this sudden change acted chiefly on the lumbar enlargement, producing paraplegia as in this man, or sometimes on the cervical enlargement. The latter produced wrist-drop and this patient had previously been so affected.—Dr. A. M. GOSSAGE mentioned that this same patient had been under his care and then he had had loss of sensation. This was altogether the seventh attack of paraplegia. The former attacks had been associated with a good deal of alcohol.—Dr. WILLIAM PASTEUR referred to cases of diver's paralysis in St. Bartholomew's Hospital. He would like to ask if there had been any bleeding from the nose or ears.—To this Dr. MAGUIRE replied in the affirmative.

Mr. F. C. WALLIS showed a case of Repeated Fracture of the Patella occurring in a man, aged 69 years, who 35 years ago had fractured his left patella. Since the inguinal injury, which was treated by rest, the patient had refractured the patella twice, the last time about five months ago. The patient was a carpenter by trade and had until the last few weeks been quite able to do his work. The patient's present condition showed that the main part of the patella was widely separated from the tibia and the intervening gap was filled up by a large translucent fluctuating swelling which had gradually appeared since the last accident.

OBSTETRICAL SOCIETY OF LONDON.

Incarcerated Retro-displaced Gravid Uterus.—Exhibition of Specimens.

A MEETING of this society was held on April 4th, Mr. ALBAN DORAN, the President, being in the chair.

Dr. J. MUNRO KERR (Glasgow) read a paper on Incarcerated Retro-displaced Gravid Uterus. He pointed out that three varieties of backward displacement of the gravid uterus might be met with—viz., "retroflexion," "retroversion," and "partial or incomplete retroversion," and that each form was illustrated by one of the cases. Case 1.—An incarcerated, retroflexed, gravid uterus, which after several fruitless attempts at replacement righted itself. This occurrence was pointed out to be not very uncommon. Case 2.—This case was reported in full by Professor Murdoch Cameron in the *British Medical Journal* of Oct. 31st, 1896. It was one of incarceration of the retroverted gravid uterus in which the uterus could not be replaced until Professor Cameron opened the abdomen, then performed cystotomy and emptied the bladder of a large quantity of blood-clot. He then stitched up the bladder and abdomen. The pregnancy continued to full time. The treatment adopted in this case was discussed. Case 3.—Partial retroversion (sacculation) of the gravid uterus caused by a myoma in the anterior wall. Reduction of the displacement; continuance of pregnancy. The causes of this form of retro-displacement were described. Case 4. — Extra-uterine pregnancy simulating and mistaken for a retroflexed gravid uterus. Some reported cases were referred to and the differential diagnosis of the two conditions was discussed.

The PRESIDENT had seen a case of retroverted gravid uterus, where the cervix was to the right and the elastic fundus to the left, exactly simulating extra-uterine pregnancy, but a few days' delay cleared up the diagnosis. When examining such a doubtful case under anæsthesia care should be taken lest a gravid tube be palpated roughly. He referred to Unterberger's case where a gravid uterus, displaced by a fall in the first month, caused distension of the bladder which forced open the urachus and allowed the urine to flow from the umbilicus. Rupture of an ovarian cyst through the umbilicus was diagnosed, but Unterberger emptied the suspected cyst by passing a catheter through the umbilical opening and another through the urethra. The uterus, retroverted and retroflexed, sacculated and partially incarcerated, righted itself and delivery occurred at the fifth month.

Dr. ARTHUR GILES had reported to the society two cases where extra-uterine gestation had been mistaken for retroversion of the gravid uterus, and he now narrated a case which he had seen with Dr. Martin of Clapham where a retroverted uterus simulated ectopic gestation. The mass in Douglas's pouch was reduced under anæsthesia and was then found to be distinctly bi-lobed, the left lobe feeling like a gravid tube. In a fortnight's time, however, the uterus had recovered its normal shape and abortion ensued two months later.

Dr. A. H. N. LEWERS criticised the treatment of Dr. Kerr's second case. He did not consider that abdominal section should be recognised as a method of treatment. He had seen many cases at the London Hospital where the retention of urine had been extreme, over five pints of urine having been drawn off, and in at least two of these there was hæmaturia, but in none had abdominal section been suggested. His treatment was after emptying the bladder to replace the uterus, preferably under anæsthesia, or to encourage the uterus to rise spontaneously by rest in bed and regular evacuation of the bladder. Such spontaneous reposition was not unusual. In Professor Cameron's case (Case 2) he suggested that the urethra might have been dilated and the clots removed by forceps and irrigation, and if the bladder had been kept empty for a few days and the patient kept in bed he believed the uterus would have been spontaneously replaced.

Dr. R. BOXAL emphasised the advantage of rest and specially of anæsthesia in reducing the impacted uterus. As an instance of spontaneous reduction occurring after rest in bed he narrated a case of retroverted gravid uterus with a fibroid in the posterior uterine wall which had been mistaken for an extra-uterine pregnancy. He failed to reduce the uterus by gentle manipulation, but a few days in bed, followed by an anæsthetic, allowed the uterus to spontaneously regain its position. This at once revealed the true nature of the case.

Dr. CHARLES A. MORRIS referred to a case which he had seen in the late Dr. Matthews Duncan's ward in which there was an extreme retention of the urine with hæmaturia. An entire cast of the bladder was subsequently passed per urethram and complete recovery ensued. He thought few cases would call for abdominal section, the possible exception being where the uterus was bound down by firm adhesions, but in such cases abortion would probably take place at an earlier period than an operation would be contemplated.

Dr. HUBERT ROBERTS asked if Case 4, where an extra-uterine gestation had been diagnosed as a retroverted gravid uterus, was one of intra-peritoneal hæmatocele following a rupture. He thought the best way to differentiate between these two conditions was, as Dr. Cullingworth has insisted, to examine bimanually under anæsthenia, when in the case of hæmatocele the body of the uterus would be felt to be lying above the pubes in front of the swelling. Dr. Roberts did not believe that abdominal section could ever be necessary to effect reduction of a retroverted gravid uterus

and could find no evidence that such a course had ever been adopted at St. Bartholomew's Hospital.

Dr. AMAND ROUTH had seen a case of impacted retroverted gravid uterus diagnosed as hæmatocele, but an examination under anæsthesia would always clear up the diagnosis. Every case he had seen had been capable of reposition without abdominal section. He had now in his ward at Charing Cross Hospital a case where retention of urine with this condition had persisted with overflow for the 14 days before admission and where 154 ounces of urine had been drawn off. It had taken three weeks for the bladder nearly to recover its muscular tone and even now there was about an ounce of residual urine, and pus was still present in the deposit.

Mr. A. C. BUTLER-SMYTHE asked how long efforts at reduction had been persisted in previously to the operation in Case 2. He thought that abdominal section in such cases was uncalled for as it increased the risk to the patient.

Dr. HERBERT SPENCER had not yet seen a case of retroversion of the gravid uterus in which it had not been possible to replace the organ. Sometimes the replacement had not been effected at the first attempt and sometimes the organ had righted itself after ineffectual attempts at replacement had been made. In some cases the replacement had at first not been complete (possibly owing to slight adhesions), but by rest and keeping the bladder empty the uterus had been enabled to return to its normal position. He considered that the only cases requiring abdominal section were those in which the retroverted organ was fixed by strong adhesions.

Dr. MUNRO KERR, in reply, admitted that cases requiring abdominal section were very rare, but there was absolutely no doubt that in some cases the uterus could not be replaced by the ordinary measures. As evidence of this he quoted Dr. W. Hunter's classical case, where at the post-mortem examination the fundus could only be raised after the symphysis had been divided. Olshausen and others in such irreducible cases had advised extirpation of the organ, and Jacobs, after opening the abdomen, had only succeeded in raising the uterus after separating the dense adhesions which fixed it to the pouch of Douglas. He thought in these difficult cases that abdominal section was preferable to either extirpation or incision of the uterus.

The following specimens were shown:—

Dr. C. J. CULLINGWORTH: Incarcerated Fibro-myoma in an Unusually Young Subject.

Dr. A. F. STABB: Myxo-myoma (? Sarcoma) of the Uterus.

The PRESIDENT: Tubal Mole with ¾-inch Fœtus in Perfect Preservation.

Dr. W. DUNCAN: Tubo-ovarian Mole.

Dr. A. W. ADDINSELL: Fibroma of the Ovary.

Dr. MACNAUGHTON-JONES: Ovarian Cystoma Complicating Pregnancy.

Dr. ARNOLD LEA: Sarcoma Vaginæ in a Child, aged three years, with Microscopical Section.

HARVEIAN SOCIETY OF LONDON.

Discussion on the Diagnosis and Treatment of Chronic Purulent Nasal Discharges.

A MEETING of this society was held on April 5th, Dr. W. H. LAMB, President, being in the chair.

Mr. EDMUND ROUGHTON, in introducing the discussion, said that a diagnosis should be sought for by means of (1) questions, (2) rhinoscopy, and (3) certain special methods of examination. 1. Questions.—By questioning they ascertained the nature of the discharge, whether it was unilateral or bilateral, continuous or intermittent, affected or not by change of posture, offensive to the patient or to others, and whether it was accompanied by pain or headache. 2. By rhinoscopy, aided with the nasal probe they endeavoured to localise the situation of the pus, at the same time directing attention to the occurrence of polypi or granulations, atrophy of the mucous membrane, crusts, ulcerations, necrosis, adenoid growths, nasal obstruction, and the possible presence of a foreign body. 3. Special methods of examination were employed when the information gained by questions and by rhinoscopy led to a suspicion of disease of the accessory sinuses. Mr. Roughton limited his remarks on treatment to diseases of the accessory sinuses. In antral empyema the indications for treatment were: (*a*) the removal of cause; (*b*) the evacuation and drainage of pus; (*c*) antiseptic irrigation; and (*d*) the removal of morbid material when present. These indications should be carefully borne in mind. Thus it would be futile to irrigate the antrum through the nose whilst it was allowed to be continually re-infected by carious teeth; nor could it be expected to cure by drainage when the mucous membrane of the cavity was polypoid or when the bony walls were carious. On the other hand, needless damage would be inflicted by scraping out an antrum which was simply acting as pus receiver to a diseased frontal sinus. In most cases the treatment should be commenced by alveolar drainage, using a good-sized tube. When this method failed after a fair trial the radical operation through the canine fossa must be resorted to. The treatment of empyema of the frontal sinus was divided into intra- and extra-nasal. The former comprised removal of the anterior part of the middle turbinate and irrigation of the cavity through the infundibulum. These methods should have a fair trial and should always precede extra-nasal treatment. The external or radial operation was recommended as being free from danger and offering a very good prospect of cure at the expense of a scarcely visible scar. The operation should be urged when there was pain or other evidence of imperfect drainage. The treatment of ethmoidal suppuration consisted in removing the middle turbinate and scraping out the affected cells, taking care not to transgress the anatomical limits of the lateral mass of the ethmoid. Any direct operative attack upon the sphenoid should only be undertaken after most careful consideration.

Dr. HERBERT TILLEY agreed with Mr. Roughton that the pain of chronic suppuration of the accessory centres was due to accumulation of pus under pressure and not to inflammation of the nerves in the walls of the sinuses as had recently been suggested by Mr. J. G. Turner. In support of this opinion cases of antral and frontal sinus suppuration were cited in which the pain disappeared immediately free drainage had been secured by the removal of a tooth, irrigation of the antrum from the nose, or the removal of the anterior half of the mid-turbinal and of obstructing polypi and granulation from the region of the mid-meatus. The mucous membrane cushion between the mid-turbinal and the outer wall of the nose was not pathognomonic of antral suppuration; it occurred most frequently in this disease but was sometimes present in chronic inflammatory conditions which were specially localised in the mid-mental region. In testing for pus in the antrum by transillumination the patient's comparison of the subjective sensation of light in the eyes was sometimes of more value than the surgeon's comparison of the facial illumination. Dr. Tilley strongly supported alveolar drainage as at any rate a preliminary measure in all cases of antral suppuration. It was a simple mode of treatment and often cured cases; furthermore, it afforded the patient the easiest means of treating himself in the intervals between his visits to the surgeon. Puncture in the canine fossa he had relinquished because of the inflammatory swelling of the soft parts produced by the traumatism and in which the head of the drainage-tube was apt to be lost, and because the method did not provide drainage from the lowest point. Intra-nasal drainage was advisable where alveolar puncture would necessitate the removal of a sound tooth—an uncommon contingency. It necessitated a more serious surgical procedure and many patients had great difficulty in finding and catheterising the naso-antral opening. To obviate the difficulty the anterior end of the inferior turbinal might be removed. If the alveolar method failed after a fair trial, as a general rule the radical operation described by Mr. Roughton might be advised. Failure to cure by this means was sometimes due to insufficient curettage of the upper and inner region of the antrum which was cellular in structure and closely associated with the anterior ethmoidal cells which were often diseased. Dr. Tilley had tried irrigation of the frontal sinuses in a few cases of empyema, but they were only benefited, never cured. The solutions included boric and carbolic lotions, peroxide of hydrogen solution, and iodoform emulsion. There were undoubted risks in the radical operation and at least six fatal cases of septic osteomyelitis had been recorded, but the present methods of treatment reduced such risks to a minimum. He advised (1) preliminary intra-nasal treatment involving removal of the mid-turbinal and all chronic inflammatory products from the mid-mental region; (2) providing free drainage into the nose at the radical operation; (3) the removal of all degenerate

mucous membrane from the sinus by curettage and then frequently packing it until a healthy mucous membrane was produced. The external wound was then allowed to close and remarkably little scarring was produced. If the sinus were small the whole anterior wall was removed and the cavity was obliterated. If it was a large one only a portion of the anterior wall was removed and the cavity was treated as already stated. In dealing with suppurating ethmoiditis thorough intra-nasal treatment should be exhausted before resorting to external operation. By the adoption of the former method a cure might sometimes be brought about, but even failing this the improvement was sometimes so marked that the patient would consider the symptoms practically cured.

Dr. SCANES SPICER, Dr. WM. HILL, Dr. DUNDAS GRANT, Dr. STCLAIR THOMSON, and Dr. H. L. LACK also took part in the discussion.

Mr. ROUGHTON, in reply, agreed with Dr. Dundas Grant that dulness on transillumination was caused more by thickening of the antral lining than by pus in its cavity, and consequently that absence of shadow should be regarded rather as a favourable prognostic than as a negative diagnostic sign. The fatal results following operations on the frontal sinus referred to by Dr. Tilley and Dr. Lack were more often due to the disease than to the operation; when really due to the operation they were attributable to two causes acting in combination—viz., sepsis and absence of efficient drainage.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Rotunda Hospital Report.—Atmo-kausis and Zesto-kausis.

A MEETING of this section was held on March 16th, Dr. A. V. MACAN, the President, being in the chair.

Dr. PUREFOY, replying to criticisms made on the Rotunda Hospital Report by members of the section,[1] said that it was surprising to him that a teacher of Professor Smith's attainments should not be familiar with the term "mixed" applied to accidental hæmorrhage. The term had some advantages, but Dr. Purefoy was not prepared to defend it. He did not think that there was any good ground for Professor Smith's suggestion that some of the cases described as accidental hæmorrhage were more probably cases of low insertion of the placenta. It was true that when dealing with hæmorrhage in the sixth month of pregnancy it might be quite impossible to determine whether the placenta was low down or not. Observation in the hospital for some years past had each year furnished accumulating proof that the use of the vaginal tampon in severe accidental hæmorrhage was a wise and judicious proceeding; but Dr. Purefoy took care in speaking to the students to point out that many cases met with could still be treated by assisting the uterus to contract and then rupturing the membranes. He adhered to the opinion that the position of the twins was correctly described and that they were correctly described as a case of locked twins, the nature of the complication being in no way altered by the fact that one head was collapsed. The method of performing Porro's operation was no doubt old-fashioned, but Professor Smith's disapproval did not make him dissatisfied with it. Dr. Smyly formulated the very serious charge against the hospital staff of introducing a new and unwise treatment of puerperal eclampsia, but Dr. Purefoy failed to see how he deduced from the narration of the case any grounds for suggesting that a new mode of treatment had been adopted. The patient, a primipara, was admitted to hospital in a bad condition, with marked œdema and scanty, albuminous urine. Dr. Purefoy still thought that the emptying of the uterus by the safest method was the proper proceeding. It was true that eight hours afterwards an eclamptic fit occurred, which Dr. Smyly attributed to the operation, but Dr. Purefoy did not agree with him. Dr. Purefoy then went on to reply to the criticisms of Dr. Kidd, Dr. Jellett, Mr. Hastings Tweedy, and the President.

The PRESIDENT read a paper on Atmo-kausis and Zesto-kausis.—Mr. HASTINGS TWEEDY thought that the instrument had a great future before it. If even a part of what was claimed for it was realised it would almost revolutionise the treatment of endometritis. When used for septic endometritis, where the germs had penetrated to a considerable degree, he feared if the cauterisation could destroy these germs it would destroy the whole endometrium.—Dr. JELLETT said that, judging from the effect of steam on the hand, a ten-second or 15-second application would not give in any ordinary case a very deep amount of cauterisation of the uterus. The instrument would be an adjunct to the curette but he could see no ground for supposing that it would take its place.—The PRESIDENT, replying, said that he had given the results of some 800 cases from the reports of the most eminent gynæcologists in America and Germany. In a very short time the instrument had met with an extraordinary reception abroad and was looked upon as one of the best additions to our therapeutics. The depth of cauterisation was regulated by the time the instrument was allowed to act. If it were desired to close the cavity altogether it would probably require two operations. As to sterilisation of the mucous membrane Dr. O'Sullivan had told him that he had used superheated steam and found it did not kill streptococci.

[1] THE LANCET, March 10th, 1900, p. 707.

LIVERPOOL MEDICAL INSTITUTION. — The thirteenth ordinary meeting of this society was held on April 5th, the President, Mr. Edgar Browne, being in the chair.—Dr. Stopford Taylor exhibited a case of Dermatitis Repens involving the back of the hand and fingers. The disease had been arrested and was proceeding rapidly towards recovery under a dressing of powdered iodoform forcibly rubbed in with the finger.—Dr. Taylor also exhibited a case of Tuberculous Ulceration of the Skin on the Right Side of the Neck corresponding to the shirt-collar band. The ulcer was six inches in length and two inches in width and had spread rapidly, having been in existence but four months.—Dr. W. J. Allen related a case of Embolism of the Mesenteric Artery occurring in a patient after a normal labour and associated with mitral stenosis. Symptoms of collapse came on some time after delivery. There were no signs of hæmorrhage or rupture of the uterus to account for such collapse, and the condition was discovered on examination after death.—Dr. T. R. Bradshaw showed a woman, aged 30 years, the subject of Diffuse Scleroderma. The condition was almost universal, but affected the hands and forearms to an extreme degree, the fingers being hide-bound and almost fixed in a position of slight flexion. The affection seemed to involve the sheaths of the flexor tendons, as was shown by the existence of creaking on passive movement. The onset was acute a year ago and was marked by pain, redness, and swelling in the fingers.—Dr. F. H. Barendt considered this case to be typical of the disease; the pathological process involved brought scleroderma and Dupuytren's contraction of the palmar fascia—sclerodactyly—and those rheumatic nodules known sometimes as Heberden's nodes into the same category. He suggested the administration of thyroid extract rapidly pushed till physiological reaction occurred. The prognosis was not always unfavourable—in fact, cases were recorded where the disease not only was arrested but a certain degree of involution took place.—Mr. R. W. Murray showed a man, aged 40 years, upon whom he had operated for Aneurysm of the Femoral Artery in Hunter's Canal. The aneurysm was of recent date and was increasing; it was as large a swelling as would be caused by a substance of the size of the closed fist buried in the thigh muscles. The general health was good and there was no sign of disease of the vascular system. The operation consisted in excising the sac as far as possible after ligature of the artery above and below. The excision was only partial owing to extensive gummatous infiltration of the adjacent structures. The man had resumed his work.—Mr. K. W. Monsarrat remarked that the unusual site of the aneurysm was probably to be explained by the affection of the arterial walls having been secondary to the tertiary syphilis of the muscles in the vicinity and a direct extension from the latter.—Dr. T. R. Glynn exhibited a man, aged 39 years, with Bulbar Paralysis; the duration of the disease was 16 months. The family history was good; there was a history of ague, but not of syphilis. The affection commenced with speech trouble, followed in three months by difficulty in deglutition. The tongue was completely paralysed, the seat of fibrillary tremors, and atrophied. Speech was lost; he emitted a laryngeal sound of nasal quality in

answer to questions. The lips were partially separated and saliva escaped; the mouth was elongated laterally owing to the action of the muscles of expression. The palate reflex was absent, the pterygoids were paralysed, and the temporal and masseter muscles were normal. The vocal cords were normal. The case was one of amyotrophic muscular atrophy, there being atrophy of some of the intrinsic muscles of the hands, presence of the masseteric reflex, and over-extension of the great toes, exaggerated on producing the plantar reflex.—Mr. George G. Hamilton showed a patient upon whom he performed the operation of Colectomy for Carcinoma of the Sigmoid Flexure, and advocated the use of Murphy's button in such cases, with special reference to the correct application of the button.—Dr. Glynn read a note on the Use of Thyroid Extract as an Emmenagogue. He had met with many cases of young girls who, through some slight developmental changes, had a temporary amenorrhœa or a delay in menstruation, and in such cases the administration of thyroid extract in doses of half a grain once a day, generally given at bedtime, proved sufficient to re-establish or start the function of menstruation.—Dr. William Carter observed that the cases mentioned by Dr. Glynn were those of young people, and from the well-recognised influence of the thyroid secretion on developmental changes he thought that its effect in such might be different from those in people of mature age, as it had been established by Chéron, and his results had been copied into the most recent books on therapeutics that a marked effect of thyroid extract was to diminish and even check all forms of uterine hæmorrhage.—Dr. J. E. Buchanan, Dr. Barr, Dr. Gemmell, and Dr. A. C. Wilson also took part in the discussion which followed, and Dr. Glynn replied.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 29th, the President, Dr. D. Burgess, being in the chair.—Dr. Sinclair White showed: 1. A Sarcomatous Scapula removed from a man, aged 42 years. The tumour occupied the supraspinous fossa and had a history of four months' duration. There was no special difficulty encountered during the operation and the patient made an uneventful recovery. 2. A Sarcomatous Left Upper Jaw removed from a girl, aged eight years. Although practically the whole of the superior maxilla was excised there was very little deformity. 3. A Cancerous Rectum excised after the method of Kraske from a man, aged 42 years. The fæces were diverted by a preliminary colotomy and the artificial anus was subsequently closed by a plastic operation. The patient was rapidly regaining flesh and strength.—The President showed (1) a Malignant Growth of the Spinal Column; (2) a case of Cerebral Diplegia in a child and read notes of another case of the disease in an adult aged 29 years; and (3) a case of Locomotor Ataxy with Aortic Aneurysm.—Dr. W. S. Porter showed (1) a Melanotic Sarcoma of the Spinal Column and (2) a case of Aortic Aneurysm.—Mr. H. Hallam showed (1) a case of Sporadic Cretinism in a woman, aged 48 years; the thyroid was atrophied and supra-clavicular lipomatous swellings were present. 2. A girl, aged 14 years, niece of the above, with an Enlarged Thyroid. Her parents were cousins, her father being brother of the first patient. No definite symptoms of cretinism were present but there was a suggestion of coarseness of hair and feature. 3. A case of Sporadic Cretinism in a boy, aged 11 years, who had markedly improved under three months' treatment with thyroid extract.—Dr. Godfrey Carter read a paper on Electric Heat and Light Baths. He pointed out that the hot bath flourished in England in the first three centuries of the Christian era. The Turkish bath was introduced into England about 50 years ago; its great disadvantage was that the patient breathed the hot air of from 125° to 240° F. Few people could, however, inhale hot air at a temperature of from 150° to 200° F. without incurring great risks. The human body is capable of supporting with impunity exposure to an atmosphere of a temperature far above that of boiling water provided that the air be dry and not inhaled.

ÆSCULAPIAN SOCIETY OF LONDON.—A meeting of this society was held on April 6th, Mr. A. W. Galloway, the President, being in the chair.—Dr. Risien Russell read a paper on the Part Played by Micro-organisms in the Causation of Certain Diseases of the Nervous System. In some instances microbes had been definitely proved to be responsible for the production of these maladies, while in others the mode of origin of such diseases was largely a matter of surmise. After relating the ways in which micro-organisms were supposed to bring about morbid changes in the nerve elements he discussed the diseases of the nervous system proved or supposed to be due to microbic infection, as they fell into one or other of the following groups, though he admitted that it was not always possible to draw a hard-and-fast line between certain affections placed in one class as opposed to those placed in another: (1) cases in which definite morbid changes were found in the nervous system, which were ascribed to the action of micro-organisms and in which the microbe was proved to exist in the affected parts; (2) morbid changes present, but the micro-organism only found in some other parts of the body and not in the affected parts of the nervous system; (3) morbid changes met with in the nerve elements and ascribed to the action of microbes or their toxins, but in which the micro-organisms had not as yet been proved to exist at all, much less in the nervous system; (4) no gross morbid changes present in the nervous system, yet the mode of onset of the malady and its subsequent course were best explained by assuming that it was due to microbic infection, and a micro-organism was known to exist in the body, though it had not been isolated from the nervous system; and (5) cases similar to those included in the last group, but in which no micro-organism had been proved to exist either in the nervous system or in any other part of the body.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 4th, Dr. Michie, the President, being in the chair.—The following motion, proposed by Dr. Ransom and seconded by Dr. Hunter, was carried unanimously: "That the Nottingham Medico-Chirurgical Society desires to call the attention of the medical profession to the frequency with which diachylon is now bought for internal use and to the great dangers attending such use, and suggests the advisability of measures to restrict its indiscriminate sale."—Dr. Hunter read a note on Gastralgia in which he considered that many of the so-called cases of dyspepsia in young women were true neuroses and were benefited by quinine and ordinary diet rather than by bismuth and milk.—Dr. Handford read notes on a case of Posterior Basic Meningitis in a girl, aged five years, who died after an illness of 14 weeks.—The following cases and specimens were shown by Mr. Anderson: (1) A patient, aged 61 years, after Prostatectomy of the Middle and Lateral Lobes by the Suprapubic Operation; 10 ounces of gland tissue were removed with complete relief of all former symptoms; (2) a Large Pedunculated Cylindroma of the Bladder removed by operation; (3) Primary Carcinoma of the Bladder; (4) with Mr. Chicken, Gall-stones, those from the gall-bladder being laminated, while one which was encysted in the duct was formed by agglomeration; and (5) Portion of Bowel removed by operation for intussusception in a child, aged five months.

LIFE ASSURANCE POLICIES FOR CHILDREN.—In the last annual report of the Clerical, Medical, and General Life Assurance Society the directors state that they have often had occasion to discourage proposals upon the lives of children, because no pecuniary interest existed such as would make an ordinary assurance policy valid in law. This was to be regretted in the cases where the desire of the parents was to set aside money in such a form as would stimulate a child's interest in thrift, and the directors have now found that they can grant assurances to children, however young, on a principle which, while meeting the thrifty aim of the parent, will also render them an essentially sound and legitimate class of business. By this method the society grants a policy under which the full sum assured will be payable on death occurring only after the age of 21 years. Should death occur earlier all the premiums paid will be returned, while if the premiums themselves be discontinued earlier any surrender value will be held for the assured. The premium payable on such assurances at very young ages is much less than on those effected at or after the age of 21 years. For instance, the annual payment upon a policy of £1000 opened before the child is three years of age is only £7 13*s.* 4*d.*, or less than half of the amount that would be payable if the proposal for insurance were delayed until the age of 21 years.

Reviews and Notices of Books.

Bubonic Plague: its Course and Symptoms and Means of Prevention and Treatment, according to the Latest Scientific Discoveries, including Notes of Cases in Oporto. With an Appendix specially written by the Author for the English Edition. By Dr. JOSÉ VERDES MONTENEGRO, ex-Interne of the Central University of Medicine, Associate Physician of the Hospital de la Princesa, and Professor at the Municipal Micrographical Laboratory, Madrid. Authorised Translation by W. MUNRO, M.D. Edin., Author of "Leprosy," late Medical Officer of St. Kitts, W.I., &c. London: Baillière, Tindall, and Cox. 1900. Price 3*s.* 6*d.* net.

THIS work gives a very good and interesting account of plague. Not only has the very voluminous literature bearing on this subject been traversed in search of information in order to bring the volume up to date, but the results of the author's reflections thereon are set forth, with the addition of numerous observations drawn from his own large field of experience. Dr. Montenegro's work has been translated by Dr. Munro, and the author has specially written an appendix for the English edition in which he has been enabled to add details of later investigations and results than were possible when the original book was first published in the Spanish language. As we have said, the literature about plague is already very voluminous and the reader views the accumulation of books, reviews, and reports—official and otherwise—with an embarrassed feeling akin to that which we may suppose a mouse to feel when suddenly encountering a large mass of provender; he does not know where to begin.

Plague is an acute infectious fever caused by the bacillus pestis of Kitasato and Yersin and it is the only known disease of the class which attacks epidemically and simultaneously man and certain of the lower animals. It differs from some other infectious maladies in not being a water-borne disease, but the results of investigation point to the probability of its being rat-borne—at any rate as one of the vehicles for its spread. The factors for the dissemination and prevalence of the disease are the presence of the bacillus, susceptible material for it to work upon, and a suitable environment.

The knowledge of plague which we have acquired of late years has modified very much the ideas which were derived from reading about its terrible epidemics in the past; but it must be confessed that notwithstanding the enormous amount of labour—scientific, clinical, and hygienic—that has been devoted to the subject and the prophylactic methods for fortifying the system against the attacks, of which those living centuries ago had not the faintest conception, there still remain many points which require to be cleared up, especially as to the life-history of its bacillus discovered almost simultaneously by Kitasato and Yersin in 1894.

The subject does not manifestly lend itself to any brief discussion. One of the briefest and best *précis* of the information acquired in India and elsewhere in regard to plague that we have met with is contained in the official Report of the Sanitary Measures in India, 1897-98, Vol. XXXI., published in 1899.

As Dr. Montenegro remarks, energetic action can only arise from clear ideas derived from a correct interpretation of the phenomena of the disease, and it has been his aim and object in the present work to set forth what his ideas on the subject are. He does not claim that his conclusions will be final, for scientific men of our time live in a constant state of mental instability as to their opinions throwing aside some ideas and replacing them by others. In his brief appendix from Madrid, dated Feb. 1st, 1900, he discusses the subject (as he tells us, with his notes and commentaries before him) of all that has been done up to the very date of publication. This enables him to comment on the latest observations under such headings as "Bacteriology," "Means of Infection," "Contagion," "Clinique," and "Sero-therapeutics," and what he has to say is both pertinent to the subject and well worth reading—as, indeed, is the whole work.

Le Système Nerveux Central. (The Central Nervous System). Par JULES SOURY. Paris: Georges Carré et C. Naud. Vols. I. and II. 1899. 4to, pp. 1865.

THIS elaborate work, dealing with the structure and functions of the central nervous system and including a critical history of theories and doctrines, is divided into the following parts: (1) antiquity, (2) modern times, and (3) the contemporary period. M. Soury displays wide learning and remarkably painstaking efforts in his account of the ideas of the ancients with regard to the nervous system including the mind. The subject matter is arranged in chronological order under the great teachers and schools of those times. The names of Aristotle, Galen, and Plato stand out naturally in great prominence. The second period brings the narrative down to, and includes the discovery of, cerebral localisation. The teachings and writings of many remarkable men are described in this part of the work, commencing with Varolius. Anatomists and physiologists, such as Willis, Malpighius, Vieussens, Haller, Vic d'Azyr, Bichat, Rolando, Flourens, Broca, as well as philosophers such as Descartes, Spinoza Hobbes, Kant, all belong to this period. The remarkable advances in our knowledge of the functions of the nervous system brought about by the researches of Fritsch and Hitzig (1870), Ferrier, and many other experimentalists are noted at the end of this epoch. The clinical observations of Broca and Hughlings Jackson had done more than suggest the fact that certain functions of the brain were limited to definite areas of the cortex before the important experimental researches of the above-named investigators were made. Subsequently it was pointed out that sensory functions also had their seat in the motor cortex. Under the heading of "The Contemporary Period" the advances in our knowledge are largely chronicled in an anatomical order. After describing the various motor and sensory paths the author deals with functions of the cerebral cortex, the crebral lobes, and the sensory motor centres. Having given some account of the emotions, including pain, M. Soury passes on to the consideration of the centres for sight, hearing, and smell. The modern theory of neurons is fully discussed in connexion with the researches of Golgi, Ramon y Cajal, van Gehuchten, and Lenhossek. A very complete index, both as regards the subject matter and the names of authors, is appended. The index of the subject matter is really, more strictly speaking, an elaborate summary of the contents of the book. It is impossible to close these volumes without being impressed by the amount of labour which their compilation must have involved. They constitute a most valuable work of reference which not only sketches out our present knowledge of the anatomy and physiology of the nervous system, but also shows the laborious steps by which this knowledge has been built up.

LIBRARY TABLE.

Life and Happiness. By AUGUSTE MARROT. London: Kegan Paul, Trench, Trübner, and Co., Limited. Paris: Librairie Tischbacher. Pp. 82. Price 2*s.* 6*d.* net.—This little book consists in the main of plain and simple directions for living a healthy, honest life. Though the author is not a medical man his directions as to food, washing, clothing, ventilation, and light are very sensible. Especially are we glad to see his objection to making children eat too much, or to making them eat what they do not want, on condition

of afterwards having something that they wish for. We do not for an instant mean to say that a child should be allowed to eat anything he likes, but he should never be forced to eat anything obviously distasteful. The author gives us the impression that he considers happiness a matter entirely within every man's power to attain. This is true in part, but there are forms of unhappiness which are unavoidable.

A Plea for a Simple Life and Fads of an Old Physician. By G. S. KEITH, M.D., F.R.C.P. Edin. London: Adam and Charles Black. 1900. Pp. 149 and 173. Price 3*s.* 6*d.*—The two essays here bound up in one volume were formerly published separately in 1896 and 1897. As we said before when speaking of them, they are well worth reading, if at times they inculcate counsels of perfection. Few of us, in London at any rate, can always get vegetables fresh from the garden. But that most people eat too much is certain and Dr. Keith's insistence upon the virtues of abstinence is quite justified.

The Nursing Profession: How and Where to Train. By Sir HENRY BURDETT, K.C.B. London: The Scientific Press. 1900. Pp. 355. Price 2*s.*—This is the second year of publication of Sir Henry Burdett's useful list of hospitals and other training establishments for nurses. The table of institutions is prefaced by some information as to the general requirements of the schools and by a very succinct abstract of the various laws affecting nurses so far as regards their duties. This abstract deals with such questions as the notification of infectious diseases, the registration of births and deaths, and the burial of stillborn children. The book is well compiled and should prove of value to those for whom it is intended.

JOURNALS.

Treatment.—The principal article in the March number has for its subject the Medical Side of War, and is by Dr. J. Edward Squire, surgeon-lieutenant-colonel commanding the London Companies, Volunteer Medical Staff Corps, and senior medical officer to the Red Cross Society in the Suakin campaign, 1885. In drawing attention to the necessity for considering sanitation in connexion with military movements, he says that the chief scourge of armies in the field has always been diarrhœa, and though such sanitary precautions as the circumstances of a campaign will allow may be practised, enteric fever and affections of the intestinal tract will figure as the chief causes of sickness on service. *Treatment* has hitherto made its appearance weekly, but the publishers, Messrs. Rebman, Limited, now announce that in future it will be issued as a monthly journal in the second week of each month. It will contain 64 pages of reading matter, and the Periscope in each issue will comprise all the "specialities" which formerly were distributed over four distinctive parts. Dr. L. Freyberger has consented to act as editor. The price of subscription will remain the same.

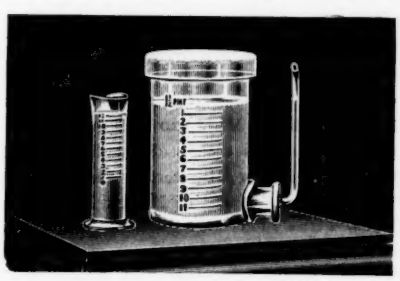
The *Veterinarian* for March contains much interesting matter. It commences with a paper on Septic Pleurisy read by Professor Dewar before the North of England Veterinary Medical Association, the writer particularly relating in detail the symptoms shown by two cases which he had under close observation and discussing the general lines of treatment usually adopted. Mr. Wallis Hoare contributes some remarks on soundness in horses; lengthy extracts are taken from various sources bearing upon the subjects of glanders, sheep-scab, louping-ill and its conveyance by the medium of the grass tick. Some canine notes are added by Mr. B. P. Godfray, one on some Cases of Santonine Poisoning and another on a Severe Compound Fracture of the Lower Jaw being of particular interest. In the latter case the dog was anæsthetised by the administration of chloral per rectum and the fractured jawbone united by wire, the patient making a good recovery. Contributions from foreign periodicals, scientific notes culled from various sources, and reviews of new books complete the number.

In the *Veterinarian* for April there is a continuation of the translation by Mr. John A. W. Dollar of Professor Cadiot's class lectures, the subject chosen this time being Mitral Insufficiency in the Horse. The treatment of this disease in animals, as pointed out by the lecturer, can only be palliative when they have to be made use of for purposes of work. Whatever drugs are administered rest, moderate and gentle exercise, and good hygienic surroundings are absolute essentials if success is to be obtained, and these conditions are not obtainable in the majority of working animals. Professor Mettam relates the details of an interesting Hernia of the Cæcum into the Muscles of the Right Flank of an aged dissection subject. The same gentleman also gives an interesting paper on Embryology, this having been read before the Midland Counties Veterinary Medical Association. The papers on Louping-ill and the Grass Tick, by Mr. E. E. Wheeler, and the summaries of the work done on Sheep Scab by the American Bureau of Animal Industry, are continued, as are also the Remarks on Soundness in Horses, by Mr. Wallis Hoare. The Month's Progress and Science Notes contain abstracts from scientific reviews and from foreign veterinary journals.

New Inventions.

THE "LUPA HUMANISER"

ON account of its richness in casein cow's milk is generally diluted before being given to infants, and by the use of the simple apparatus shown in the illustration this can be accomplished without the disadvantage of a corresponding reduction in the proportion of cream and milk sugar. The apparatus consists of two graduated jars, one to contain the milk and the other for measuring the sugar. There are also a glass cover, a piece of bent glass tube, and a perforated indiarubber stopper. The bent tube being in the upright position, the large jar is filled with fresh cow's milk up to the top mark,



and after all the cream has risen to the surface the bent tube is turned downwards so that the requisite portion of the milk from which the cream has risen may flow out. The graduations of the sugar measure correspond to the sugar contained in the known quantity of milk thus withdrawn from the graduated milk jar, and the proper amount of sugar having been measured off and added to the milk the whole is made up to the original volume with boiled water, or preferably with cold fresh barley water. The milk is now prepared and may be sterilised in bulk or in bottles. The price of the apparatus is 10*s.* 6*d.* It may be obtained through any druggist or on application to Mr. William Toogood, Wholesale Druggists' Sundryman, Heddon-street Regent-street, W.

THE LANCET.

LONDON: SATURDAY, APRIL 14, 1900.

IN THE LANCET of Jan. 13th of this year Dr. JOHN PHILLIPS of Southsea recounted the particulars of an interesting case of protracted gestation where he had taken considerable pains to ascertain the material dates beyond doubt. His patient, a primipara, declared that intercourse had taken place on one occasion only, Sept. 6th, 1898, her last period had been proved by evidence additional to her own to have ended by August 24th, and her child was born on July 14th, 1899, 324 days after the cessation of her last period and 311 days after the alleged date of coitus. Dr. PHILLIPS, in remarking on the case, called attention to its importance from the medico-legal point of view, and as a matter of fact it illustrates appositely the difficulty that may arise in proving legitimacy or illegitimacy by reference to the possible date of conception or to the accepted views as to the period of gestation.

This very difficulty was recently experienced at a trial in the Queen's Bench Division where it proved too much for the jury who were unable to arrive at a verdict. The issue has now been finally decided before Mr. Justice LAWRANCE and a special jury and the case is well worth medical attention. A couple named SOMERS, who had been married for more than a year but were childless, separated on or about August 12th, 1876, and paid visits in different houses, never apparently meeting again. On Sept. 11th the wife wrote to her husband to state that she had eloped with a man named MILWARD, but in the divorce petition which ensued the date of adultery was fixed as Sept. 7th, and the decree was granted without apparently that date being questioned. On June 18th, 1877, after the decree *nisi* had been granted, but before it had been made absolute, a child was born. This child, now a young man of full age, was registered on baptism as the child of MILWARD and was, it would seem, treated as such by all those connected with him until questions arose as to dealing with certain funds held in trust under the marriage settlement of Mr. and Mr. SOMERS. To a share in these trust funds the child was *primâ facie* entitled as a son born during the continuance of the marriage—i.e., before the making absolute of the decree of divorce; and a suit in the Chancery Division to compel the trustees to deal with the funds led to an action in the Queen's Bench Division, the question for the jury being whether there was or was not issue of the marriage of Mr. and Mrs. SOMERS. A child born in wedlock is by law presumed to be the child of the husband until it is proved that it is impossible that this can be the case. Now the dates show that the child of Mrs. SOMERS was born 281 days after her admitted elopement with the co-respondent and 285 days after the date named in the petition as that upon which the adultery took place, while August 12th, the date given as the last proved opportunity of access to Mrs. SOMERS by her husband, would make the period of gestation of a child born to him 311 days—precisely the period named in the case of protracted gestation recorded in our columns by Dr. PHILLIPS. Had Dr. PHILLIPS been called as a witness to prove his experience he would probably have been asked to admit in cross-examination that the date of coition given by him rested on the evidence of the patient in question, who would be likely as a single woman and a child in years to minimise her fault by asserting a single act of unchastity to have occurred, and thus would fix the date of her first fall rather than the date of any subsequent lapse as the only possible date of her impregnation. Dr. PHILLIPS'S testimony was, perhaps, not invited because of the weakness which we have indicated, but it would have undoubtedly weighed heavily with those members of the first jury who saw that the evidence of the numerous medical witnesses called before them was inconclusive. For if this evidence went to prove that it was exceedingly unlikely that the child was the child of Mr. SOMERS, it did not, and could not, prove that the protracted gestation was impossible, while Dr. PHILLIPS'S case would have been a well-authenticated example of the abnormality the existence of which was under dispute.

At the trial before Mr. Justice LAWRANCE and a special jury the difficulty of establishing more than extreme improbability was no doubt felt by the learned counsel who sought to disprove the legitimacy of the child, and he consequently strengthened his case by dwelling at length on circumstances extraneous to the medical evidence, and these undoubtedly aided him considerably in his contention. The question to be decided was not whether it was or was not possible that under certain conditions a child could be born at so long an interval from impregnation as 311 days, but whether there was or was not issue to a particular marriage. As relevant to this specific point evidence was given that at the trial of the divorce petition the wife sought to establish a counter charge of impotency against her husband. This she did not succeed in maintaining, but the evidence of the husband, which was read in court before Mr. Justice LAWRANCE, showed that the sexual relations between the pair were unhappy and not such as pointed to a probability of issue of the marriage. Moreover, the wife appears to have complained to her family in respect of this very matter before she decided to leave her husband. Other evidence of fact was given on both sides with regard to the possibility and impossibility of access during the weeks which were alleged to have been spent by husband and wife paying visits apart from one another; but the jury, who declared themselves satisfied that there was no issue to the marriage without waiting to hear the concluding addresses of counsel or the summing up of the judge, must be taken to have accepted this interval in conjugal life as proved. Beyond this they no doubt considered that the normal period of about 275 days assigned by the medical witnesses before them pointed very strongly to the child being that of the co-respondent, while the probability of the abnormal gestation of 311 days having occurred was minimised by the relations proved to have existed between husband and wife. It will be noted

that neither husband nor wife gave evidence, obvious considerations of decency precluding two persons from being allowed to contradict one another on oath in open court on questions of the greatest privacy, involving the bastardising of the child of one or both of them. When all the circumstances and probabilities of an adulterous connexion are considered it will be felt that the finding of the jury in the SOMERS case was reasonable and in all probability correct, although such questions must always involve doubt and difficulty on the part of those called on to determine them.

IN 1632 Dr. GOULSTON, a Fellow of the Royal College of Physicians of London, left a sum of money for the maintenance of a lecture to be delivered annually within the College, the lecture to be read from time to time "by one of the four youngest doctors in physic of the said College, upon two or three or more diseases." It was further enacted that this lecture "should be read" between Michaelmas and Easter, on three days together, both forenoon and afternoon, on some dead body if possibly it can be procured, which shall then and there be dissected for the diseases treated of, and shall afterwards be buried." With the passage of time the original details of the Goulstonian Trust have necessarily undergone some modifications, but the lecturer is still appointed from one of the four junior Fellows elected each year, and the subject chosen is generally of a scientific rather than of a purely clinical character, inasmuch as the lecturer has presumably had less clinical experience than his hearers. The words of Sir WILLIAM JENNER in delivering the Goulstonian Lectures nearly half a century ago expressed in appropriate language the feelings which should guide the Goulstonian lecturer in the choice of his subject. "It is fitting," he said, "that on this occasion the junior Fellow of the College should treat only of matters concerning which he has reason to hope that his knowledge is inferior to that of his hearers in a less degree than on any other." In accordance with this spirit most of the Goulstonian lecturers of recent years had taken the opportunity of bringing before the College the results of original researches in which they have been engaged, and this was done by Dr. P. HORTON-SMITH whose excellent dissertation upon the bacteriology of typhoid fever is completed in THE LANCET this week.

Dr. HORTON-SMITH'S Goulstonian Lectures exhibit in their author marked powers of original observation, and in them he has presented us with a monograph on the bacteriology of typhoid fever of great scientific value and interest—an opinion which we are sure our readers will endorse. He cleared the ground by referring to the controversies which have arisen as to the identification of the typhoid bacillus. In the first place he pointed out that there is not the smallest difficulty in distinguishing this bacillus from what may be called the classical bacillus coli communis. They resemble each other superficially but differ essentially in that the typhoid bacillus does not, for example, form gas bubbles in dextrose gelatin and does not clot milk or form indol—points by which the two can readily be distinguished. The real difficulty in diagnosing the typhoid bacillus arises from the fact that the typical bacillus coli communis is by no means the sole representative of this great group. The fact has to be recognised that the term "bacillus coli" does not refer to a single bacillus but to a great group of microbes, some of which are identical with the classical bacillus coli communis, while others very closely resemble the typhoid bacillus. Dr. HORTON-SMITH discusses the various forms of such microbes as have been described and the different tests which have been proposed to distinguish them from the true typhoid bacillus, and this part of his work will be of practical ability to many bacteriologists. He detailed 10 tests which may be applied, but considered two of them of considerably more importance than the others—namely, the agglutination test carried out in high dilutions (1 in 1000) and Pfeiffer's test. The agglutinating power of the blood in typhoid fever has also been taken advantage of in clinical work under the term "the Widal test," and Dr. HORTON-SMITH considers that for this purpose a 1 in 20 dilution with a short time limit (one hour) gives admirable results. He states that a positive reaction so obtained has a diagnostic value about equal to that of the eruption—that is to say, that in extremely rare cases both may be observed in cases which are not cases of typhoid fever. Pfeiffer's test, we may remind our readers, consists in injecting into the peritoneum of a guinea-pig a ten times fatal dose of the bacillus in question together with a very small quantity (0·001 cubic centimetre may be quite sufficient) of typhoid serum from a highly immunised animal. If the bacillus in question be the typhoid bacillus, then while a control animal injected only with the bacillus will die the other animal will recover, the bacilli being converted first into granular masses—a process known as Pfeiffer's phenomenon—and then gradually disappearing under the influence of the lysogenic properties of the serum. The practical utility of the test from a clinical point of view is impaired by the fact that it can only be applied in a properly appointed laboratory, but the value of such proceedings for prophylactic purposes such as the examination of soil and water cannot be overrated.

In one place in his lectures—that where he discusses the distribution of the bacillus of typhoid fever in the body—Dr. HORTON-SMITH betrays a desire to reform our present classification of the disease. The typhoid bacillus can always be found in the stools in the early periods of the disease. It can also be always demonstrated in the Peyer's patches and the mesenteric glands. It does not, however, remain limited to these situations, but very soon, and in all cases, passes into the blood—from which it can very often be isolated—and thus is distributed to the most diverse organs. Thus it can always be found in the spleen and in the liver. It gives rise in the skin to the typical eruption. It is in most cases present in the marrow of the bone and in the bile. It is frequently present in the urine, not uncommonly in the kidneys, and occasionally it may be detected in the lungs. Dr. HORTON-SMITH, therefore, logically contends that the conception of the disease which regards it merely as affecting the alimentary canal can no longer be maintained. So far from considering typhoid fever as an intestinal disease pure and simple, we should, he thinks, rather look upon it as a modified form of septicæmia in that always and in all cases the bacilli pass into the blood and

then into the various organs, while the symptoms, excepting as far as they are intestinal, are referable to the poisons there produced. True, in nearly all cases there is a definite local and primary disease whence the secondary dissemination of the micro-organisms takes place, but the fever, with this limitation, is septicæmia. We do not quite hold with the Goulstonian lecturer here. Though scientific ideas as to the specific fevers have had to be considerably altered since the foundation of the science of bacteriology, and though in all probability many new discoveries will be made which will require further alteration, we think a new classification of typhoid fever is at present premature and prefer to regard the disease as a specific fever having its main local manifestations in the intestines rather than to include it under the head of septicæmia. If we join issue with Dr. HORTON-SMITH in this matter we none the less congratulate him on the success of his labours. His Goulstonian Lectures display him as an original observer and a sound reasoner.

THE twenty-fourth section of the Lunacy Act of 1890, in dealing with the examination of pauper lunatics, provides for the remuneration of the medical man called in for this purpose in its fifth sub-section, which runs as follows: "The guardians of the union to which the workhouse belongs shall pay such reasonable remuneration as they think fit to the medical practitioner who, not being an officer of the workhouse, examines persons for the purpose of certifying under this section." The construction of the words "such reasonable remuneration as they think fit" was the point at issue in an action brought against the Chertsey Board of Guardians by Mr. J. L. A. HOPE, a medical man in practice at Addlestone, who sued the guardians in somewhat unusual circumstances of considerable interest to his brother practitioners.

His claim was for £7 7*s.* for certifying seven paupers as lunatics at the rate of one guinea for each examination. The guardians did not deny that they were in the habit of paying a guinea for such examinations, but they had decided that a fee of half a guinea in each case, or £3 13*s.* 6*d.* in all, would be a reasonable remuneration, because the seven paupers in question were examined, as their counsel phrased it, "*en bloc*." With regard to this expression counsel afterwards explained that they were not examined *en bloc*, but were brought into the room *en bloc* for the purpose of examination—a process which he appeared to consider facilitated the work of the medical man in dealing with them. The principle to be acted on, in the opinion of the Chertsey guardians when they fixed the fee that they were willing to pay, is, no doubt, one well known in the circles of retail commerce—it is summed up in the words "a reduction on taking a quantity"; but the very proper result of the case will convince the guardians, and other persons who need the information, that commercial precepts do not necessarily spell good law. The contention of the guardians in refusing to pay more than half the habitual fee for such certifications was based upon an idea that the Act gave them absolute discretion in the matter, and that their estimate of what was reasonable and fit must be accepted without discussion. But his Honour Judge LUSHINGTON considered that the reasonableness of the sum offered was a fit subject for his consideration, and he proceeded to hear evidence as to the custom observed by boards of guardians and medical men in other districts on similar occasions. From his subsequent observations, when he came to give judgment for the plaintiff for the seven guineas claimed, it is plain that he attached considerable weight to this evidence of custom, so that the plaintiff was fortunate in being able to put competent witnesses, both lay and medical, into the box to depose to a guinea being the usual minimum fee paid to a medical man for examining and certifying paupers as lunatics. The testimony of Mr. ENGALL, clerk to the Staines Board of Guardians with 25 years' experience, who spoke to the full fee being paid by the board that employed him when so many as four lunatics were examined upon a single occasion, was particularly to the point and valuable. In the course of the action a fact came to light which served to put the guardians of Chertsey in an unfortunate position. The need to examine so many as seven paupers at a time with a view to their possible certification as lunatics arose in a manner not creditable to the methods of those responsible. It appeared that the Local Government Board had had their attention called to the fact that the guardians were dealing with a person as a lunatic for whom they had no certificate, and that the Board had made a representation in the matter. Whereon the workhouse authorities thought that they ought to protect themselves in respect of other persons in a similar plight. Counsel for the guardians said that the workhouse authorities probably had certificates with these persons originally, but as the documents could not be found they took steps to obtain fresh ones. It is conceivable that if the learned county court judge had not upheld Mr. HOPE's claim we might have heard of other guardians being actuated by a similar spirit of economy and saving up their lunatics with the idea of having them examined when enough had accumulated to justify a 50 per cent. reduction.

In considering the matter of custom Judge LUSHINGTON was no doubt also influenced by the fact that no single witness was called by the defendants to prove any precedent for their view or to show that any other board of guardians had ever adopted the principle upon which they claimed to act. With the responsibility cast upon the medical man in making such an examination his Honour was fully impressed. It should be carried out, he said, in the most patient and thoughtful manner, and he expressed surprise at the use of the term *en bloc* in such a context. His views in the matter we entirely endorse. One of the most anxious duties of the medical man is the examination of his fellow citizens with a view to deciding if they shall be deprived, for their own good, of their personal freedom; and we are proud to think that the same scrupulous care is taken to arrive at the exact mental condition of the pauper and the duke. Mr. HOPE is to be congratulated on his success in upholding the dignity of his profession, and we trust that the Chertsey Board of Guardians and all other authorities who need the lesson will learn that however wide the discretion allowed by an Act of Parliament to those on whom it confers duties may seem to be, it is a recognised principle, whether stated in so many words in the Act or

not, that powers thus given should be reasonably employed with reference to all the circumstances. And reasonableness, outside the phraseology of the shop-window, does not necessarily mean cheapness.

Annotations.

"Ne quid nimis."

THE PLAGUE IN AUSTRALIA.

THE cases of plague which have occurred in Sydney so far are five in number: a lorry driver, who was attacked on Jan. 19th and who recovered; a sailmaker, who was attacked on Feb. 15th and died on Feb. 22nd (the report of the case and diagnosis were made after death); a labourer, who was attacked at midnight on Feb. 26th, in isolation; a publican, who became definitely ill on March 1st at midday, in isolation; and a labourer, the date of whose illness is not precisely given. In the official report upon the first case it was intimated to all acquainted with the subject that infection had been communicated by a flea and it was mentioned that an advertisement had been inserted in the daily press requesting information as to the occurrence of sickness among, or the disappearance of, rats. The inference thus drawn from the first case has turned out to be perfectly correct. On Feb. 14th a landing-waiter reported in response to the advertisement that a greater number of dead rats than usual were to be seen and for about five days past had been seen at a certain wharf. Search was at once directed and during the afternoon seven dead rats were delivered at the laboratory. At least two exhibited lesions which were consistent with death from plague, but it was considered necessary to proceed systematically in order to ascertain the form of septicæmic disease exhibited. This business was not so quickly concluded as might be expected, for the material was usually putrid, and no person was available who had ever seen the disease in rats. Several days were thus consumed, during which time a rat-catcher, who was hired for the purpose, delivered fresh specimens, both alive and dead, many of which had nothing the matter with them. The disease was first quite certainly identified with plague on Feb. 24th, that being the day on which glands from the patient in the second case were first submitted and examined. Down to the beginning of March no evidence that the rats were dying in large numbers had been obtained, but they were steadily dying day by day in larger numbers than usual. The epidemic among them was most probably entirely confined to a long row of wharves in the heart of the city. Now, the first case of plague occurred in a lorry driver who was constantly obliged to visit this very row of wharves; the second in a sailmaker who occupied premises which overlook one of these wharves (and he had removed five dead rats from his water-closet shortly before he was attacked); the third in a wharf labourer who was employed at the wharf from which the earliest specimen rats were obtained; and the fourth in a publican who dwelt in the street where that wharf lies, and opposite to it. The fifth case was discovered in a suburb three or four miles away, and occurred in a man who had not been into any part of the city for at least a fortnight, but who worked for a produce dealer who got supplies of hay, corn, &c., from the implicated wharves. No suspicious illness existed, however, in the house of his employer. Every possible care has been taken by Dr. Ashburton Thompson and his staff to prevent the spread of the disease. The practice hitherto followed has been the removal of cases and all members of the household to isolation, with subsequent disinfection of the premises. Persons who have been in contact with the disease are detained for 10 days. As at Alexandria no illness of any kind has occurred among these, and under the described circumstances it seems probable that the removal of the patient, and perhaps his immediate attendant, would be a more reasonable and a sufficient step if combined with surveillance of the remainder of the household at home. A moderate (and now not quite sufficient) stock of Haffkine's prophylactic is at command. Some weeks ago steps were taken towards replenishing it. Every effort has been made by the Department of Public Health to avoid exciting panic; but whether from success in this endeavour or from implicit confidence in the efficiency of the central health authority (a flattering but in this case an embarrassing supposition for this authority), not merely the public but all municipal authorities regard the situation with equanimity and even with indifference. The fact is that an essentially bad system of local government has persisted for so long that the people have learned to await everything which is necessary or desired at the hands of the central government and have lost much of their initiative in local affairs. Their efforts rarely go beyond a deputation to a Minister. It is possible that an awakening is preparing in connexion with plague, and then scapegoats will of course be easily found. Since the above was written we learn from a Reuter's telegram in the *Times* of April 10th that altogether 93 cases of plague and 29 deaths from the disease have occurred at Sydney and one death at Fremantle, W.A.

RELATION OF ALCOHOLISM TO SUICIDE.

DR. W. C. SULLIVAN, Deputy Medical Officer of H.M. Prison, Pentonville, contributes an interesting article on the above subject to the current number of the *Journal of Mental Sciences* (April, 1900). The aim of the paper is to determine the rôle which alcoholism plays in the increase of suicide in England and to establish the distinctive characters which constitute the type of alcoholic suicide. Dr. Magnus Huss, in his classical work on Chronic Alcoholism (1852), stated "that the suicidal impulse is a more frequent accompaniment of the melancholia of drunkards than of melancholia from other causes, and, further, that amongst the uneducated classes suicide frequently follows on the disordered emotional tone, which sooner or later results from the abuse of alcoholic liquors." The majority of observers—Morselli, Westcott, Ferri—argue that the two phenomena of alcoholism and suicide show an approximate correspondence in the relations of geographical distribution and of time to justify the inference of their relationship as cause and effect. On the other hand, Colojanni in Italy, and, to a certain extent, Strahan in England, question whether this relationship is potent or considerable enough to influence the statistical movement of suicide. After quoting the Registrar-General's returns of the deaths attributed to intemperance (1867–1897) and the figures in Mr. Whittaker's memorandum published with the report of the Licensing Commission which give the consumption of beer and spirits in the United Kingdom for the years 1842–1898, Dr. Sullivan shows from a careful discussion of the facts and figures that they represent really a decided increase of alcoholism in this country of late years. The statistical returns of actual and of attempted suicide are next discussed and curves are plotted from which it appears "that suicidal tendencies have grown in a degree entirely out of proportion to the increase in population," and that this growth has been much more considerable in the category of suicidal attempts than in that of actual suicides. It also appears that abortive suicidal attempts differ widely from actual suicides in that their predominant cause tends to operate at a relatively early age (the period 21 to 30 years in females

and 30 to 40 years in males being the maxima). Now the tendency to occur at a relatively early age, which is the chief distinctive feature of abortive suicidal attempts, is also a character of a special group of actual suicides—viz., those dependent on alcoholism. In the occupational groups dealt with in the Registrar-General's returns there are several which present a very high rate of alcoholism and a corresponding frequency of suicide. These are more particularly the groups related to the liquor traffic, or those where social conditions lead directly to alcoholic excess—e.g., publicans, butchers, coach and cab service, commercial travellers, and musicians. Per contra the agricultural occupations furnish a low rate both of alcoholism and of suicide. The explanation of this is that the visceral and organic depression, and consequent melancholic tendency resulting from alcoholism are powerless to overcome suicidal impulses arising during intoxication, whereas in healthy subjects such impulses speedily vanish and come to nought.

BERI-BERI ON A FISHING VESSEL.

IN a short pamphlet[1] M. René Cruchet, *Interne des Hôpitaux*, gives an account of an outbreak of disease which was diagnosed by Dr. Rondot of Bordeaux as "an epidemic clinically resembling beri-beri." The circumstances were as follows. A vessel of 300 tons burthen, which for many years had traded in logwood between Central America and Europe, was sent as a fishing vessel to Newfoundland in 1898. The voyage was uneventful and in March, 1899, she again visited the fishing ground and remained cruising about without touching land until the end of the season when she returned to Bordeaux. Up to the middle of August all went well. The crew of 28 men lived aft in a dark, ill-ventilated, but dry cabin, where they were greatly overcrowded, the captain and chief officer having separate rooms in the fore part of the ship. For food all hands depended chiefly on fresh codfish, grilled or made into soup, and steeped biscuit, with the addition of a little butter, lard, and ham several times a week and an occasional allowance of preserved peas, beans, or cabbage. Once every month "a box of corned beef" was issued, but M. Cruchet does not mention the quantity. The water-supply, which was stored in wooden casks, was of good quality, and besides cider (which turned sour in September) each man received about one-third of a pint of spirit (*eau-de-vie*) daily. On August 19th a sailor named O—— sprained his ankle so badly that he had to lay up in his bunk. At first the local affection was all that troubled him, but in about a fortnight's time a general malaise set in accompanied by swelling of the legs, and soon the man's whole body became œdematous. Towards the middle of September another sailor began to complain of excessive lassitude with thoracic oppression. About this time a most nauseous smell was noticed emanating from the hold and was ascribed by the sailors to the débris of the logwood that was formerly carried. On Oct. 1st the vessel left for home carrying a cargo of 160,000 codfish, and before she reached Bordeaux on Oct. 31st the great majority of the crew, including the chief officer, who lived apart, were more or less affected with weakness, especially in the lower limbs, loss of appetite, constrictive pains in the thorax and abdomen, also giddiness, formication, and œdema, which for the most part was localised in the legs but sometimes also in the face. Out of the whole number only six or seven escaped, and in no case did any serious gastric or intestinal symptoms present themselves. Three deaths occurred during the homeward voyage. On landing at Bordeaux O—— and another sailor were admitted into the Saint André Hospital under Dr. Rondot, and a few days later five more of the crew joined them. The symptoms of all were alike, and included an erythematous cuticular eruption with its sequelæ. By a process of exclusion, which M. Cruchet describes at length, Dr. Rondot finally arrived at the diagnosis already quoted, but for some time he naturally hesitated to commit himself to a definite opinion. O—— was eventually found dead in his bed, having expired during the night. Œdema from head to foot and consolidation of the lower part of left lung were the sole signs observable. No post-mortem examination was permitted. The other six patients recovered. M. Cruchet discusses the etiology of beri-beri, referring *inter alia* to 10 published accounts of outbreaks of the disease on board ship. The view recently advocated by Brémaud and Laurent that beri-beri was due to the want of fatty matter in the patient's diet does not find favour in his eyes, all his cases having had a sufficiency of butter, fat bacon, and ham.

[1] Bordeaux: Imprimerie du Midi; reprinted from the Gazette Hebdomadaire des Sciences Médicales.

THE GENERAL MEDICAL COUNCIL AND THE MIDWIVES BILL.

OUR suggestion of last week that the General Medical Council should have a chance of seeing the Midwives Bill as it emerges from the Standing Committee on Law with a view to ascertaining how far it meets the views of the Council is likely to be realised. We are informed that the Council will meet on May 22nd. This is a fortnight before the Whitsuntide holidays, till after which, we have been informed, the further stage of the Bill will probably be delayed. In any case the time of the meeting, which is earlier than usual, is likely to give the Council its opportunity before the Bill is discussed in the House of Lords, where the influence of the Lord President of the Privy Council, who has shown consideration for the views of the General Medical Council, is likely to be felt.

TUBERCULOSIS IN THE ITALIAN ARMY.

SURGEON-COLONEL G. DE RENZI of the Italian Army Medical Service has compiled an interesting article under the above heading for the journal published by his department,[1] the data upon which his observations are based being derived from the records of the civil population as well as from those more immediately within his own province. According to the statistical tables furnished it would seem that in respect of tuberculous affections the health of the Italian Army has improved considerably of late years. During the decade ending 1887 phthisis pulmonalis with its allies gave rise to a mortality of 1·90 per 1000 of strength, being responsible for 19·61 deaths out of each 100 from all causes; whereas during the decennary period 1887–96 the corresponding mortality fell to 1·22 per 1000, and the percentage of fatal cases was only 14·99. In two carefully prepared tables the writer exhibits the incidence of tuberculosis according to (*a*) the station and (*b*) the birthplace (or place of residence prior to incorporation) of the patients who succumbed, hoping in this way to be able to establish the medico-topography of the disease throughout Italy with especial reference to the selection of sites suitable for its treatment and cure. Surgeon-Colonel De Renzi's examination of the vital statistics published by the Ministries of Agriculture, Home Industry, and Commerce have led him to the conclusion that the death-rate from tuberculosis in all its forms amongst the civil population of Italy does not exceed 1·86 per 1000. This, he thinks, tends to show the excellence of the climate, the mortality in other countries being so much greater. In France, for instance, the latest authorities have rated the loss from tuberculosis at 3·91 per 1000 per annum, while in Vienna,

[1] Giornale Medico del Reg. Eserc., No. 6, 1899.

according to Schrätter, it is no less than 7·4 per 1000. Unfortunately, however, the writer goes on to observe, although nature has been so generous to Italy, man as yet has done little or nothing to help in the great war of extermination which is being waged against tuberculosis. The authorities in Belgium, Norway, England, America, Germany, even France, have put their shoulders to the wheel, but in spite of the counsels of Professor Cardarelli, Professor de Giovanni, and Professor Foà the Italian Government remains passive. In a campaign of this description the medical officers of the army should not act merely as idle spectators. Every year 300 tuberculous invalids are relegated to their homes to spread contagion among their relatives and yet no steps are taken to warn the local health officials and enable them to adopt precautionary measures. Unquestionably sanatoria for the reception of military invalids should be established; and nothing could be easier than to find suitable sites for them in Southern Italy and all along the Ligurian coast. The Italian Army Medical Department has worked hard to improve the hygiene of barracks, the food of the soldiers, and their health in general whilst with the colours; let them now display the same zeal in bringing about the total suppression of the most terrible of modern maladies. Already the results of their efforts are indirectly perceptible. Between the ages of 20 years and 40 years in civil life 35·71 per cent. of the total mortality is due to tuberculosis, while among the troops the proportion is only 18·21 per cent., or as nearly as possible half. The difference is striking, but, as the writer is careful to point out, it must not be forgotten that soldiers are picked men or that the civil death-rate is largely swollen by military invalids.

APOMORPHINE AS A HYPNOTIC.

THOUGH apomorphine differs little in composition from morphine, being formed simply by privation of a molecule of H_2O, its action has always been regarded as only emetic and expectorant and not as in any degree narcotic. The observations of Dr. C. J. Douglas published in the *New York Medical Journal* of March 17th seem to show that it has distinct narcotic properties. According to him "it will produce sleep in a few minutes even when the patient is suffering from the wildest delirium. Though its value has remained so long unrecognised there is no hypnotic so prompt, so safe, and so sure." He finds that it is useful in all forms of insomnia regardless of the cause. The average dose is one-thirtieth of a grain administered hypodermically—about one-third of the usual emetic dose. The object is to give a dose on the one hand sufficient to produce sleep, and on the other, so small that nausea and vomiting will not result. As a patient occasionally is found who is very susceptible to the emetic action it is well to give at first the minimum hypnotic dose—viz., one-fiftieth of a grain. In delirium a little nausea does not matter and such caution is unnecessary. The patient falls into a sound sleep in from five to 25 minutes without nausea or other disagreeable sensations. If no result is obtained within half an hour the dose is too small. Vomiting indicates too large a dose. Dr. Douglas has had two or three cases in which large doses were required to produce sleep. In these patients emesis could not be produced however large the dose. The direct hypnotic action of apomorphine lasts apparently from one to two hours, but in insomnia patients will often sleep all night if once put asleep. Such patients often require enormous doses of ordinary narcotics, sleep too heavily and too long, and awake with very disagreeable sensations. These never follow the use of apomorphine: patients say that they feel refreshed as after normal sleep. Apomorphine has also other advantages: it is not cumulative and consequently may be repeated at short intervals, and there is no possibility of a "drug habit" being acquired, for it becomes a vigorous emetic when the dose is increased to one-tenth of a grain. The aqueous solution does not long retain its strength, therefore the drug should be used freshly dissolved. The following cases illustrate its value. A business man who worried over his affairs had attacks of excessive nervousness, when sleep was impossible and even lying in bed was intolerable. One-thirtieth of a grain of apomorphine administered hypodermically in a few minutes put him to sleep for the night. The same treatment succeeded when all other means had failed in the case of a physician who had suffered for several weeks from insomnia. An epileptic, aged 38 years, had violent post-epileptic delirium which ordinary narcotics did not influence. After apomorphine was given he went to sleep in 10 minutes. When he awoke, after two hours, he was free from delirium. In a case of delirium tremens the patient was held on the floor with difficulty by three men. A little over one-thirtieth of a grain of apomorphine was injected and apparently caused some nausea. In less than 10 minutes he was sleeping soundly. When he awoke after an hour the delirium had disappeared. In hysteria and in the persistent insomnia that follows the disuse of morphia Dr. Douglas has also obtained excellent results. In the latter he finds that it is the only reliable hypnotic. Whether his claim that apomorphine is the most valuable of all the hypnotics be confirmed or not, his exceedingly definite results show that it is worthy of a trial.

AMERICAN CONGRESS OF TUBERCULOSIS.

AN entirely new element has been introduced into the discussions on tuberculosis which have recently taken place in America by the coöperation with the Congress of the Medico-Legal Society. The February meeting of the Medico-Legal Society was held in joint session with the Congress of Tuberculosis, acting under the authorisation of a Committee of Arrangements which had been formed by the society at the November meeting, 1899. The success of the gathering exceeded all anticipations, and consequently the Medico-Legal Society decided to devote the March meeting to a further consideration of tuberculosis. The various schemes which have been proposed in the crusade against tuberculosis in different parts of the world certainly have their legal aspects, and valuable help might be derived from a joint meeting of representatives of medicine and the law. The purely medical points and the purely legal points would, of course, be left in the hands of the physicians and lawyers respectively, but there are certain considerations where the two meet, such as questions concerning the rights of corporations to insist on certain precautions being taken to further prophylactic measures. Here an interchange of views between members of the two professions might lead to valuable conclusions as to what steps might be taken to attain the results which both have in view.

FRESH AIR FOR THE CHILDREN.

THE Children's Fresh Air Mission will hold the annual meeting of its friends and supporters at the Holborn Town Hall, Clerkenwell-road, E.C., on Thursday, April 26th, when the Hon. Sir Gainsford Bruce will, it is announced, preside. This society, whose object is to provide a yearly change of air for the children of the poorer classes of London and particularly in the crowded districts of Holborn, Clerkenwell, and St. Luke's, is deserving of the widest support; for not only do the children of the present generation benefit by its aid, but, indirectly, the children of a generation yet unborn must necessarily be the better for the improved physical condition of their parents. Primarily the fortnight's holiday in the country which the society is able to provide at a

cost of 10s. per head is intended to re-invigorate the health of the children which is too often impaired by dwelling in crowded alleys and close streets or in the limited space of model dwellings; but apart from physical benefits derivable from fresh air and good food it is easy to conceive that there must be an equally important moral benefit arising from the new conditions of life, not the least important factor of which is cleanliness. We wish the society success in its efforts. When the mission was founded 18 years ago 269 children were dealt with. In the year under notice 3171 children enjoyed a country holiday. The income in the first year was about £250 from all sources; last year it amounted to £2075. If more money had been given, especially early in each year, many more poor ailing children could have been sent away; but sufficient has been received year by year to admit of all those being sent whose need was urgent. It is worthy of note that every effort is made to obtain a portion of the cost of the holiday from the parents who invariably pay the railway fare.

INTESTINAL ABSORPTION.

THE process by which the absorption of the materials ingested into the stomach and intestinal canal is accomplished has been at different times very variously explained by physiologists. Bostock, writing in 1844, remarks that it has been generally supposed that the fluids of the intestine enter the villi upon the principle of capillary attraction, though he admits that this view is not without its difficulties; and in a note he adds that Boerhaave supposed that the peristaltic motion of the intestines had a considerable influence in propelling the chyle into the mouths of the lacteals. It was thought in Bostock's time that the lacteals had open mouths and many physiologists admitted in addition the existence of a certain kind of elective attraction. A few years previously the experiments of Dutrochet, which were subsequently greatly extended by Graham, brought the doctrine of osmosis into prominence and an explanation founded on the difference in the density of the fluids within and without the vessels was supposed to be afforded of the process of intestinal absorption. But whilst some support was given to it by various skilled observers numerous facts were observed which militated against it and even if it were in some measure true it is certain that osmotic phenomena could not afford an explanation of the absorption of oil globules or of minute particles of foreign substances and that hence some other agency must be involved. A memoir by Professor E. Waymouth Reid in which the subject of intestinal absorption is considered at considerable length appears in the Philosophical Transactions published in February in the present year. His experiments were performed on anæsthetised dogs. Two loops of intestine of equal length were withdrawn from the abdomen and covered during the whole duration of the experiment with cloths wrung out of warm water. The loops of gut were provided with glass cannulæ at each end. The materials injected were solutions of serum, peptone, and sugar at the temperature of the body. The main results of his inquiries are contained in the following propositions—that a physiological activity of the intestinal epithelium in the act of absorption is demonstrated, first, by the absorption capable of being effected by an animal of its own serum or even plasma under conditions in which filtration into blood capillaries or lacteals, osmosis, and adsorption are excluded; and, secondly, by the cessation or diminution of the absorption of serum when the epithelium is removed, injured, or poisoned in spite of the fact that removal at any rate must increase the facilities for osmosis and filtration. It may be remarked that by the term "adsorption" Professor Reid signifies "a simple soakage with some degree of assimilation, a sort of dyeing of the gut membrane" with the solutions. It may be taken for granted that the state of nutrition of the cells is the main factor in their activity and this is intimately associated with the blood-supply. The activity of the cells is characterised by a slower uptake of the organic solids of the serum than of the water and a rather quicker uptake of the salts than of the water, the relations varying in different regions of the alimentary canal. No evidence was obtained of the existence of specific absorptive fibres in the mesenteric nerves. The bile has not a stimulant action on the cells. Weak alcohol acts as a stimulant without evidence of concomitant increase of blood-supply. The cells exhibit an orienting action upon salts in solution and especially upon common salt. It can be shown that in a loop of gut with injured cells sodium chloride enters the lumen from the blood at a time when it is being actively absorbed from a normal control loop in the same animal. It was shown in the course of Professor Reid's experiments that distilled water acts very deleteriously on protoplasm, the epithelial cells being detached by simple washing out with it. In experiments made with peptone and glucose it was shown that the chief factor in the absorption of peptone is an assimilation (or adsorption) by the cells, whilst in the absorption of glucose, diffusion variable in accordance with the permeability of the cells, and consequently in all probability related to their physiological condition, is the main factor.

THE COAL SMOKE ABATEMENT SOCIETY: SILENT WITNESSES.

THERE were two summonses at the West London Police-court recently against each of the following firms—namely, Messrs. Fuller, Smith, and Turner, of the Griffin Brewery; Messrs. Thornycroft and Co.; Chiswick Soap Company; and Messrs. J. T. Duggins and Co., Dye Works, British-grove, in respect of their smoky chimneys causing a nuisance. Mr. Collins, clerk of the Chiswick Council, supported the summonses. Mr. John H. Clarke, sanitary inspector for the district of Chiswick, stated that acting upon the instructions of the district council he kept special observations upon the chimneys complained of and produced his notebook with certain dates and times when black smoke was emitted. He reported thereon to the council and produced their minutes as his authority for these proceedings. He also produced photographs showing the position of the different chimneys and the smoke issuing from them. Inspector George Petty of the Coal Smoke Abatement Society gave corroborative evidence. In the case of the Griffin Brewery the magistrate looked at the photograph and remarked that "the chimney had been caught in the very act." A representative of the firm stated that steam fuel had been used in consequence of the high price of Welsh coal, but arrangements had been made for the supply of the latter. Three photographs were produced of the premises of Messrs. Thornycroft and the magistrate inquired of the works manager, who attended, what he had to say to those silent witnesses. The works manager in answer said it was a serious matter to their business, as a special kind of coal was required for the furnace, the chimney of which was the chief offender. In the third case two photographs were produced and the defendant stated that the smoke had been stopped. Mr. Rose remarked that it appeared unjust to convict in cases of factory chimneys when the domestic chimney was permitted to go on creating a nuisance, but he was bound to enforce the Act. In the three cases he imposed a penalty of £5 in each of the two summonses, with 10s. costs, to include the expenses of the photographs, the magistrate stating that they were necessary witnesses. In the fourth case two photographs

were produced showing a chimney and a large quantity of smoke issuing from it. Mr. A. B. Watson, who defended, suggested that a mistake had been made in photographing a chimney which was not on his client's premises. He took a technical objection to the summons and said it was for the abolition of a nuisance for which notice to abate had not been served. Mr. Rose overruled the objection and said it was the same smoky chimney against which a notice had been served. However, the magistrate, acting on the suggestion of Mr. Watson, adjourned the summons for a month for further observations of the chimney and to await the action of the council with respect to other chimneys in the locality. These cases are interesting for two reasons. Firstly, we understand that the Chiswick District Council did not act spontaneously but only when the powers of the Local Government Board had been exercised against it. The Coal Smoke Abatement Society which supplied the evidence instigated the Local Government Board to put pressure upon the Chiswick District Council with results that should be of value to all communities where the local authorities will not act. Secondly, the value of the silent witness is demonstrated and no evidence against an offensive chimney will be complete for the future unless supplemented by photography.

APPENDICITIS IN A HERNIAL SAC.

IN the *Boston Medical and Surgical Journal* of Jan. 4th Dr. B. Tenney has published a case of appendicitis in a hernial sac. An old woman, aged 79 years, complained of severe abdominal pain and pain in the right groin. For some days she had been more constipated than usual and had attempted to vomit several times. Below Poupart's ligament was a tender, doughy swelling which gave no impulse on coughing. She had first noticed the swelling six years previously after unusual exertion. Strangulated omental hernia was diagnosed. Taxis had to be abandoned because it was painful. On the following day the symptoms were worse and the swelling was larger. Under local anæsthesia by Schleich's method the swelling was opened and a teaspoonful of pus and scybala were evacuated by incision. In a mass of fat with a pedicle leading to the femoral ring the vermiform appendix was found. It was tied and cut off close to the ring, to which it was adherent. Hernia of the vermiform appendix only is rare. According to Bajardi 57 cases of inguinal, 40 of femoral, and one of obturator hernia had been recorded in 1895. The crises in hernia of the appendix present the same symptoms as in appendicitis within the abdomen, but the local tenderness is a prominent symptom.

THE SALE OF INTOXICANTS TO CHILDREN.

THE country and the House of Commons may be equally congratulated on the progress made by the Bill for prohibiting the ale of intoxicating liquors to children. The Committee stage has still to be gone through, but the second reading passed without a division—an encouraging evidence of healthy public opinion on the subject. Habit at any age, and no matter of what kind, is masterful, and youth is for several reasons especially open to the attractions of alcohol. Sense is then keener, impulse more natural, education, and its later growths conviction and experience, are still only in the making. Furthermore, there can be no question that control of childhood and youth where it is exercised si commonly administered from without. The parent or teacher provides in most cases a great part of the moral energy required for good conduct. This arrangement is natural. We cannot but feel that it is a consequence of social evolution rather than the effect of an artificial system. If it be such, how are we to regard the action of a force of intelligent national opinion on the external influences which surround the social life of childhood. Surely, this is also a natural, and not, as some contend that it is, an artificial and superfluous form of control. We cannot agree with those who regard the measure prohibiting the sale of intoxicating liquors to children as an uncalled for interference with parental rights and responsibilities. It facilitates the exercise of these domestic powers, but it does not clash with them. Neither does it supersede them, for its field of operation lies outside the home. To the child who may be liable to temptation and perhaps tainted by hurtful tendencies not infrequently inherited, it provides one more effectual safeguard on the way through life. There are not too many such safeguards, and we therefore hope that whatever changes a Parliamentary Committee may introduce into the measure it will not do anything to weaken its great moral and sanitary value.

SANITARY INSPECTORS' QUALIFICATION.

THE Sanitary Committee of the Manchester Corporation have just passed a resolution declaring that the provision made by the Victoria University for granting certificates of competence to sanitary inspectors and the preparatory course of instruction arranged in conjunction therewith by the Technical Instruction Committee of the corporation are ample and satisfactory. The proof of this is that the inspectors have shown themselves most efficiently trained and have discharged their duties in a highly satisfactory manner. The committee are therefore opposed to the Public Health (Sanitary Inspectors' Qualification) Bill now before Parliament, because it is feared that the Victoria University qualification will not be accepted. In the opinion of the committee and of a great many more it would be injurious to the public interest and a great injustice to candidates for inspectorships in the north to compel them to make a journey to London to obtain a diploma, for these men belong to the artisan class and can ill afford either the time or the money that would be required.

THE ETIOLOGY OF CANCER

THERE is in medicine no greater *quæstio vexata* at the present time than that of the etiology of malignant disease, and never before have such determined efforts been made to solve this difficult problem. The Middlesex Hospital has recently organised a special department with skilled pathologists and with registrars to investigate the pathology of malignant disease, and the material obtainable from the special wards at that hospital is so plentiful that we may hope for important results. In 1899 the Cancer Society of London sent a special commissioner to the United States to examine and to report on the work being done in that country in this subject, and from his report we gather the following particulars. The New York State Legislature has founded a laboratory where scientific research work is conducted for the investigation of the cause of cancer. Similar research work is also being carried on at Boston in the Medical School of the Harvard University. The New York State Laboratory is under the supervision of the medical department of the University of Buffalo. The pathologist is Dr. Harvey Gaylord, the bacteriological department is under the charge of Dr. R. D. Pease, and an able physiological chemist, Dr. Clews, has been appointed to investigate the chemistry of the disease. A great deal of work has been done in attempting to obtain cultivations from malignant tumours, and the procedure adopted in the laboratory is as follows: full precautions are taken against contamination and many inoculations are made from each specimen, several culture media being used. Anaerobic cultures have also been tried and inoculation experiments

are also made on animals. A complete microscopic examination is also made, both when the tissues are fresh and when they are hardened. Elaborate records are kept of each investigation in a card catalogue, which renders reference very simple. It is too early yet to base any conclusions on what has been done, but the investigations are so careful and thorough that the results should be thoroughly trustworthy. Many of the opponents of the parasitic theory of the origin of cancer have so fully satisfied themselves that cancer is not a parasitic disease that all these elaborate investigations may appear useless, but it is essential that the question should be thoroughly investigated, for the acquisition of a full knowledge of the etiology of the disease will go far in indicating to us the best methods both of prevention and treatment.

FOREIGN PRACTITIONERS IN ITALY.

WE directed attention a few weeks ago to the anxiety of some of our compatriots in Italy as to the probability of legislation there to their disadvantage. The case of Italy raises the whole question of the rights of foreign practitioners in an acute and pressing form; and it is certain that it will have to be faced at the approaching meeting of the General Medical Council. It is to be hoped that those who are opposed to the recognition of foreigners belonging to countries where medical education is fairly equal to our own and to which English people repair in great numbers will prepare themselves for the discussion. The question is pretty sure to be raised in Parliament and if such proposals are to be resisted it should be on forcible grounds.

Dr. F. S. Toogood, as chairman, and Mr. S. R. Russell Matthews and Mr. R. B. Anderson, as honorary secretaries respectively of a "Provisional Joint Committee of Societies against Midwives' Registration," wish to invite through our columns subscriptions to a voluntary fund for resistance to Midwives Registration. Their letter is dated from Lewisham Infirmary, where, we presume, subscriptions may be sent.

THE Corporate and Medical Reform Association, Limited, earnestly invite donations to a "Continued Special Fund" to be used in resistance to the Midwives Bill. Cheques and postal orders may be sent to the Honorary Secretaries of the Association at 2, Southampton-street, Strand.

AT a meeting of the President and Fellows of the Royal College of Physicians of Ireland, held on April 9th, the President admitted Sir James Reid, M.D. Aberd., Resident Physician and Physician-in-Ordinary to the Queen, to the honorary Fellowship of the College.

THE Colonial Office received a telegram on April 6th from Sir Charles Bruce, the Governor of Mauritius, stating that for the week ending April 5th only one fresh case of bubonic plague had occurred and one death.

Mr. George Brown will take the chair at a meeting condemning the registration of midwives to be held to-day (Thursday, April 12th), at 4.30 P.M., at the Charing-cross Hotel.

Mr. B. Moore, late Assistant Professor of Physiology, University College, London, has been appointed Lecturer on Physiology at the Charing Cross Hospital Medical School.

Dr. W. S. Church was re-elected on Monday last President of the Royal College of Physicians of London by a practically unanimous vote.

THE PARIS UNIVERSAL EXHIBITION.

(FROM OUR SPECIAL CORRESPONDENT.)

THOUGH the Exhibition is not complete, there will be more than enough to see when the doors are opened to the public on April 15th. Many hostile criticisms have been published, and a few days ago M. Chapuis introduced a motion in the Chamber of Deputies demanding that the opening should be postponed till May 1st. He received but scant support and his motion was thrown out by 399 votes against 27. The fact is, that no great Universal Exhibition has ever been completely ready on the opening day, and some adversaries of the present Government have endeavoured to make political capital out of the delays and miscalculations which have occurred on this as on all previous and similar occasions. In England, these political considerations should not be allowed to obscure the main facts of the case. These were succinctly brought forward in the Chamber by the responsible Minister, M. Millerand, Minister of Commerce. It was on Nov. 21st, 1895, that a project of law in favour of holding the Exhibition was introduced in the Chamber, and on Feb. 3rd, 1896, an amendment opposed to the scheme was presented. It was not before June, 1896, that the amendment was rejected and the law sanctioning the Exhibition approved by both the Chamber of Deputies and the Senate. But the Palace of Industry, in the Champs Elysée, which had served for the first Universal Exhibition ever held in Paris and which dates as far back as the year 1855, could not at once be appropriated because in 1897 an exhibition of paintings and a horse show were to be held in that building. The removal of the greater part of this vast structure and the construction on its site of the magnificent Palace of the Fine Arts could not be commenced till the year 1898. Also the vast alterations of the gigantic gallery for machinery on the Champs de Mars, which was so much admired at the Exhibition of 1889, could not be commenced before last year. The same delay occurred with regard to the Army and Navy Palace, and this was due in a measure to the critical condition of the great iron industries which were not able to meet the orders received. Nevertheless the great palaces will be ready by April 13th and the art collections which they contain will constitute one of the most marvellous sights the world has ever seen. The Trocadéro with its varied colonial buildings and exhibits is likewise ready. On the Champs de Mars the great hall for festivals where the inauguration ceremony is to take place will be finished in time. It is the exhibits of the metal trades and of electricity that are the most backward. In 1889 it was not till June 1st that an official fête was held to celebrate the completion of the Exhibition. Three weeks after the inauguration of the Exhibition of 1889, some 17,000 tons of goods had been introduced on the grounds. But this year, on April 1st—that is, two weeks before the inauguration of the Exhibition—the goods introduced by the exhibitors amounted to 20,000 tons. As a matter of fact the present Exhibition is more advanced than the previous Exhibitions at the time of opening; yet it has been a much greater undertaking. In 1889 the site covered by the Exhibition measured 960,000 square metres and the buildings thereon occupied 290,000 square metres. To-day the site measures 1,080,000 square metres, but the increase is much greater in regard to the size and importance of the buildings, for these extend over 460,000 square metres of ground. Taking all these facts into consideration there is every reason to believe that those who visit the Exhibition, even during the first days, will not be disappointed. Many things will not be in their place, remnants of scaffolding may be seen here and there, but more than enough will be ready to engage the attention and to occupy many days of close and instructive investigation.

Already the festivals in connexion with the Exhibition have commenced. The first was held on Saturday last in Old Paris which is one of the most attractive features of the Exhibition. This mediæval street is built on the banks of the Seine, so that its picturesque aspect may be seen to great advantage from a distance, from the bridges or from the other side of the river. The fête was organised by the Society of Authors and of Journalists and M. Loubet, President of the Republic, several members of the Government, and many other distinguished persons were present.

Thus at least this part of the Exhibition is ready. On April 21st there is to be a big banquet at the Hôtel de Ville to celebrate the opening of the Exhibition. The President and Madame Loubet will be entertained by the town. After the dinner there will be a ball to which, to avoid too great a crowd, not more than 4000 persons will be invited. Thus there can be no doubt that the Exhibition season really opens this month.

Unfortunately, however advanced the preparations may be at the Exhibition the town itself is far from ready. For a year or so the traffic in the streets of Paris has been greatly impeded by all manner of undertakings, the most notable being the construction of an underground railway. The inhabitants put up with the inconvenience under the impression that it was all for the Exhibition and would be terminated before the opening day. In this they are bitterly disappointed. The underground railway is not yet completed and there are many supplementary tramway lines that are still in course of construction. The Rue de Londres and the Rue d'Amsterdam are blocked for the laying down of wood pavement and by the construction of an electric tramway line. It is not possible to get through the Rue de la Boëtie, while the Rue du Quatre-Septembre, the Rue Richelieu, and even the Place de la Bourse are in a deplorable condition. The Pont de l'Alma, which crosses the Seine in one of the busiest parts of the Exhibition, is undergoing repairs just at the moment when the traffic is most heavy. The planks and poles of the scaffoldings that are being carted away, the trees, shrubs, and flowers that are being brought to deck the extemporised gardens, together with the goods of the exhibitors block this bridge at all hours of the day. Even near the Arc de Triomphe some of the streets are still in the hands of the labourers and the *quai* from the Chamber of Deputies to the new Orleans railway station is "up." It was thought that the moment the Exhibition was opened there would be no more public works continuing in Paris and that a serious, perhaps a dangerous, labour crisis would ensue. This evidently will not be the case.

Many thousands of labourers and other workers flocked from the provinces and from abroad to Paris so as to be employed either at the Exhibition or on the embellishments of the town. This migration was fraught with some peril. It caused overcrowding in the poorer quarters, and there was danger of epidemic diseases being imported; indeed, some cases of small-pox occurred. It was thought that many of these provincials would acquire a taste for Paris life and refuse to go back to their own parts of the country when the public works were completed, and that if they remained they would overcrowd the labour market and thus tend to reduce wages all round. As at the same time the cost of living would increase considerably in consequence of the Exhibition there might, it was feared, be much poverty. This would mean overcrowding and insufficient food, and therefore a greater susceptibility to disease. To make matters worse, the weather has been most unpropitious and so cold for the season that most of the workers connected with the clothing trades have been thrown out of employment, for ladies especially have hesitated to order spring dresses. Under these circumstances it is perhaps fortunate that the public works are not all finished, and that the cessation of the supplementary work caused by the preparations for the Exhibition will not be so sudden as was anticipated. Thus the labour crisis will not be so acute, and this is an advantage not only from the political and economical, but also from the public health, point of view.

These economic conditions show that the sanitary reformer in visiting Paris during the Exhibition will find interesting problems to study apart from the exhibits themselves. In the Exhibition Class 3, which is devoted to hygiene, will be very interesting, and all the classes from 101 to 112 are connected with matters affecting the public health. Then there are Class 16 devoted to medicine and surgery and Class 15 to instruments of precision. Group V., with its five classes, is devoted to electricity, and here also are matters of interest from the medical and sanitary point of view. Indeed, it is difficult to find a group that does not contain something of special interest to the medical practitioner and the sanitary reformer. For instance, Group VI. is reserved for civil engineering and transport, drainage, ventilation of railway-carriages, &c., while Group VII. is appropriated to agriculture, and how much does the health of the people depend on agricultural products? Then Groups VIII. and IX. take in horticulture, forestry, and botany, in which are included medical plants. The effect of forests on climate also needs very careful study. Group X. comprises all that relates to wines, &c., and alimentary substances. Group XI., mines and metallurgy, involves the problem of the ventilation of mines, safety from accidents, &c. Group XII., includes the dwelling, its decoration, its furniture, its warming and ventilating. Class 74 is devoted especially to the last two important sanitary problems. Group XIII., textile and clothing industries, raises the question of sanitary clothing. The importance of Group XIV., embracing all chemical industries, need not be insisted upon, while Group XV., miscellaneous industries, will include many things utilised by medical men. Group XVI. comprises hygiene, social economy, poor relief, factory legislation, and many other social problems on which public health depends. Group XVII. in treating of colonies also deals with the health of the colonists. Finally, Group XVIII., the armies and navies of the world, includes the military and naval medical and the sanitary services. It will be seen therefore that the medical man and the hygienist will have much to see and to learn at the great Exhibition which will so soon open its doors to visitors from all parts of the world.

Paris, April 8th.

ANNUAL REPORT OF THE REGISTRAR-GENERAL FOR 1898.

II.[1]

A CONSIDERABLE portion of the Registrar-General's Report for 1898 is devoted to a discussion of the question of death certification. Of the half million or so of deaths recorded in England and Wales during this year, 92 per cent. were certified by medical practitioners and 6 per cent. by coroners after inquest, whilst nearly 2 per cent. were altogether uncertified. These proportions, however, require correction on account of the cases in which inquests were held on the bodies of persons who had been under medical care at the time of death. Such cases, although actually occurring under medical care, are placed in the column headed "inquests," and consequently do not appear in the medically certified list. In England and Wales more than 34,000 inquests were held during the year under notice. There is no doubt that in a large proportion of these cases medical evidence as to cause of death (with or without a necropsy) was taken at the inquest; but except in cases where a post-mortem examination is stated in the coroner's certificate to have been made it is impossible to ascertain whether or not medical evidence was given at the inquest, and, if given, what was the purport of that evidence. Out of more than 8000 inquests recently held in England and Wales it appears that the coroner's certificates contained information of post-mortem examinations having been made regarding 14 per cent. only of that number. The Registrar-General complains that the verdicts of coroners' juries are frequently so worded as to obscure the medical evidence given at the inquest concerning the cause of death, and he justly deplores the fact that the reliability of the national system of death registration should thus be seriously impaired, inasmuch as a large portion of his staff is occupied in the endeavour to maintain the efficiency of that system.

It appears that the attention of the Home Office has recently been drawn to this question in the course of an investigation into the alleged danger of poisoning by water-gas; the Registrar-General accordingly inserts an extract from the report of a committee of that office which deals somewhat ominously with the difficulty referred to. The extract runs thus: "Lastly, we are so much impressed by the insufficiency and untrustworthiness of the statistics relating to particular causes of mortality which can be gathered from returns of coroner's verdicts that we venture, though the matter is outside the terms of reference to us, to recommend strongly that some steps should be taken to secure that these verdicts should lend themselves more readily to clear classification by the Registrar-General; and in particular we suggest that

[1] No. I. was published in THE LANCET of April 7th, 1900.

in every case where the coroner is in possession of a medical certificate of death, or where medical evidence has been taken at the inquest, a copy of that certificate or an abstract of that evidence should be appended to the coroner's certificate when sent to the Registrar-General."

We fully endorse the Registrar-General's opinion that if effect were given to this reasonable suggestion of the committee it is certain that a marked improvement would speedily appear in the national records of causes of death.

In this connexion we cannot ignore the fact that medical certificates of death, which were originally furnished as an act of grace by members of our profession, are now in all cases demanded by statute under penalty in case of default. It therefore seems to us unjust that the State, after exacting this service without payment from the medical profession, should suffer their own officers to confiscate a portion of the certificates thus obtained and so render them unavailable for the chief purpose which they were primarily designed to serve.

The extent to which medical aid is administered to the dying varies considerably at different ages as well as in different parts of the country. The minimum amount of such protection is expressed by the percentages of total deaths that have been medically certified at the several ages. But these figures by no means represent the actual proportions of the community that are cared for in their last illness, for, as has already been explained, we have at present no means of determining how many of the persons on whose bodies inquests are held had actually been under medical care at the time of death.

In the course of last year coroners' inquests were held in respect of rather more than 6 per cent. of the total deaths. The proportion varied considerably in different localities. In North Wales the percentage was 3·7 and in Herefordshire 4·1, whilst it ranged upwards to 6·6 in Cheshire, 7·4 in Southern London, 7·9 in Gloucestershire, and 10·1 in Northern London. In the present report a special classification of coroners' verdicts has been attempted for the purpose of showing the extent to which the finding of the juries can be utilised for statistical purposes. In a considerable proportion of the cases the causes of death are so specified in the coroners' certificates as to admit of some kind of classification, although there is, of course, no guarantee that the causes stated represent anything more than lay opinion, for there appears to be no means of ascertaining in how many of the cases medical evidence is given at the inquests. In 4873 instances—i.e., 14 per cent. of the total inquest cases—the returns of cause of death were so indefinite as to be worthless for scientific purpose.

Of the total deaths from natural causes on which inquests were held last year, the causes of 2345 deaths, or 15 per cent., were attributed by coroners' juries to "heart failure," "syncope," or "convulsions," without statement of definite disease, and the cause of 1516 other deaths, or 10 per cent., were so returned that they could be relegated only to the indefinite class. In some counties, among which may be mentioned London, Wiltshire, Devonshire, Somersetshire, Gloucestershire, and the East Riding of Yorkshire, the ill-defined cases formed but a small proportion of the inquests on deaths from "natural causes"; but in other counties, for example, in Berkshire, Norfolk, Cornwall, Lancashire, Cumberland, and North Wales, they ranged from 23 to 44 per cent. As might have been expected the statistical value of the verdicts of coroners' juries varies greatly in different parts of the country. Thus, in Kent and in some other counties bordering on the sea there is a large excess of "open verdicts" on persons found drowned, the juries being apparently unable to determine whether the drowning was accidental or otherwise. In London and a few other counties satisfactory information as to the causes of violent deaths is generally given in coroners' certificates, but in most of the south midland counties, as well as in Staffordshire, Yorkshire, and Northumberland, large numbers of the violent deaths are returned as "accidental" merely, no indication as to the cause or nature of the accident being derivable from the certificates. Reviewing the whole question, the Registrar-General concludes with the remark that inasmuch as the verdicts of juries are the only available source of information concerning deaths which are the subject of inquest, defects such as those above referred to are of serious importance in relation to the national registration of cause of death. In the year 1898 the deaths of 10,441 persons, or nearly 2 per cent. of the total deaths, were altogether uncertified. The proportion of uncertified deaths varies greatly in different localities. The lowest proportions were 0·1 per cent. in North London, 0·8 in Monmouthshire, and 0·9 in Wiltshire, the highest proportions being 4·2 in North Wales and 6·1 in Herefordshire. About three-fourths of the uncertified deaths in the year under notice were registered as such, after reference to coroners, but without inquest; the remaining deaths which had neither been certified nor referred to coroners include the following: (*a*) cases attended by qualified though unregistered medical practitioners; (*b*) cases informally attested; (*c*) cases attended by midwives; and (*d*) cases that had received no skilled attendance whatever in their last illness. A high proportion of uncertified deaths in a given locality does not necessarily indicate official laxity in regard to the registration of deaths, for the highest percentages of deaths neither medically certified nor reported to coroners occurred in Cornwall, the North Riding of Yorkshire, Durham, Bedfordshire, Herefordshire, Huntingdonshire, and North and South Wales; but this list includes only three (viz., Cornwall, Herefordshire, and North Wales) of the seven counties with the highest proportions of uncertified deaths. Uncertified deaths are commonly most numerous among infants and least numerous among persons at ages from 15 to 25 years, the proportion again increasing steadily as ages advances.

THE WAR IN SOUTH AFRICA.

THERE is a lull in the news from the theatre of war at the present time. Meanwhile the intelligence that has been received of late, although it has no real significance and can have little or no influence on the future results of the campaign, is not calculated to exhilarate us but is admirably adapted to give rise to a sharp recrudescence of adverse criticism and inimical comment on the part of the foreign press. A little success or failure on one side or the other is the barometer which surely indicates the tone that will be adopted. Our conduct of the war and our motives in having undertaken it will not be judged by any moral standard as to whether these were right or wrong but will materially depend upon the character of the latest news. Briefly stated the situation in South Africa appears to be at the present time that Lord Roberts is not ready to make any movement owing to the want of horses to supply the place of the large number of those lost during the campaign and to the want of adequate supplies of warm clothing for the army under his command. It is absolutely essential, moreover, to secure his lines of communication before an advance is made into the Transvaal. General Buller's force after the relief of Ladysmith was, we may suppose, too much exhausted and depleted of stores and transport to undertake a passage over the Drakensberg, and it remains at Ladysmith till ready for the next move. The Boers have most skilfully taken advantage of this state of unpreparedness by successful movements of an offensive kind, in which they have shown a remarkable combination of enterprise and caution. Whether the Boers will care to incur the risk of being attacked by the Basutos by making a movement into their country in order to outflank General Brabant's column remains to be seen. The news from Mafeking is, to say the least, as good as could be expected. The splendid way in which that garrison has held out makes the desire for its speedy relief a more or less personal concern on the part of everybody in this country.

Such appears to be the present state of affairs at the theatre of war. Troops, stores, and remounts are still arriving in the country and the difficulty is their distribution where they are needed along the lines of railway and other means of transport at our disposal.

As regards the medical history of the campaign the strain on the medical service in the field must be very great with the number of sick and wounded still on their hands notwithstanding the large number of those who have already arrived in this country or are on their homeward voyage. As regards Ladysmith the information contained in a communication from the special correspondent of the *Standard* and published in that journal on April 7th is worthy of record. On Nov. 2nd, 1899, the investment of Ladysmith began. The garrison consisted of 572 officers and 12,924 men. On March 1st, 1900, when the siege was

raised, the garrison was reduced to 403 officers and 9761 men, leaving 169 officers and 3163 men to be accounted for by death and sickness. When General Buller entered the town there were in hospital 1996 officers and men, of whom 708 were suffering from enteric fever, 341 from dysentery, and 189 from wounds. During the four months from Nov. 2nd to March 1st no fewer than 10,668 soldiers, or nearly 70 per cent. of the garrison, had been admitted into hospital, to say nothing of civilians and others who had slight attacks of what the doctors called "filth fever," or incipient enteric fever. The admissions for enteric fever were 1776, for dysentery 1857. The number of deaths from enteric fever up to March 1st was 393, or more than 20 per cent., from dysentery 117, or 6 per cent., and from wounds 59. To this array of figures must be added those of officers and men killed in action, in assaults, sorties, and storming parties, and by casual bombardment.

Lord Roberts is quite right not to move his force until it is well supplied with warm clothing. The winter will soon be beginning there and the cold is great in the morning and evening, while the weather is hot during the day; consequently the climate is treacherous. Diseases of the respiratory system and dysentery may consequently be expected to prevail unless the troops be protected by warm clothing. There is, unhappily, a large amount in the aggregate of enteric fever in the army in South Africa at the present time, and dysentery seems also to be prevalent to some extent.

We hope that amid the multitude of cases of enteric fever which have occurred during the present war the opportunity has not been lost sight of for keeping a record of those soldiers who have and those who have not been inoculated against that disease, with the view of instituting a comparison between them. As a large number of the troops were, we understand, inoculated either before embarking or during the voyage out to the Cape there should be the requisite amount of material in that country for instituting a comparison of the kind and of arriving at some conclusion as to the prophylactic influence or otherwise of the experiment.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE Council held a quarterly meeting on April 5th, the Senior Vice-President, Mr. H. G. HOWSE, being in the chair.

The thanks of the Council were given to Mr. N. C. Macnamara for his presentation to the museum of casts of portions of the skeleton of prehistoric man.

The Jacksonian prize for the year 1899, on "The Pathology, Diagnosis, and Treatment of Inflammatory Affections of the Nasal Fossæ and the Associated Sinuses and Air-cells," was awarded to Dr. Lambert Lack, whose dissertation bore the motto "*Labor ipse voluptas.*"

The recommendation of the Jacksonian Committee that the subject for the Prize for 1901 should be "The Diagnosis and Treatment of Bullet Wounds of the Chest and Abdomen" was adopted.

The John Tomes prize, given for "original and other scientific work done either partially or wholly within the three years ending Dec. 31st, 1899, by Licentiates in Dental Surgery of the licensing bodies of Great Britain and Ireland," was awarded to Mr. J. H. Mummery.

The Council approved certain alterations in the regulations for the examinations for the diploma of Fellowship, by which candidates who do not possess the diplomas of the two Colleges may enter for the Fellowship. These alterations will have again to be submitted for the approval of the Council and then forwarded to the Crown for sanction and ratification.

A letter was read from Mr. Davies-Colley resigning his seat on the Council. It was resolved—

That Mr. Davies-Colley's resignation be accepted and that the Council hereby express their deep regret that illness should be the cause of such resignation, and their sincere appreciation of Mr. Davies-Colley's services to the College as a member of the Council and Court of Examiners.

The Senior VICE-PRESIDENT stated that the vacancy on the Council thus occasioned would be filled by the Fellows at the annual meeting for the election of members of Council on July 5th next.

The Council proceeded to elect to the Fellowship two Members of the College of 20 years' standing, and Brigade-Surgeon-Lieut.-Colonel W. R. Hooper, C.S.I., I.M.S., and Dr. Frederick Page of Newcastle were elected.

A telegram was sent to H.R.H. the Prince of Wales, expressing the sincere and loyal congratulations of the assembled Council on his happy escape.

PROCEEDINGS AT THE CANNON-STREET HOTEL IN REGARD TO THE MIDWIVES BILL.

THE following letter addressed to Dr. Glover and covering copies of the resolutions which we published in our last issue has been sent to us for publication:—

The Infirmary, Lewisham, S.E., April 5th, 1900.

DEAR SIR,—Your letter of April 2nd to Drs. Toogood and Henry was read, yesterday, as you desired, to the meeting convened by a Committee of Societies of S.E. London, and adjacent parts of Kent and Surrey, to consider measures to resist the registration of midwives. The meeting, after passing the two preceding resolutions, and the third, by which it resolved itself into a Committee for the purpose of giving effect to those resolutions, in reply to your letter adopted the fourth of those, copies of which we furnish herewith.

We very earnestly assure you that this fourth motion was proposed and resolution adopted, in no spirit of personal unfriendliness; but because it was the conviction of all present that the profession can never be united and organised for its common interests, until it can secure as its representatives, on all its corporations, men in harmony with its legitimate aspirations, and working together for those aspirations, instead of disregarding them, and opposing and paralysing each other.—We are, dear Sir, yours very truly,

(Signed) F. S. TOOGOOD.
J. P. HENRY.

To Dr. J. Grey Glover,
A Direct Representative for England on the General Medical Council.

Dr. Glover has sent us his reply also for publication:—

Highbury-place, N.

GENTLEMEN,—I have received from you a letter covering the following resolution moved by Dr. Lorimer Hart and seconded by Mr. Joseph Smith at a meeting presided over by Mr. George Brown and in its later and attenuated stage by Dr. Toogood.

That whereas the General Medical Council and others who support the registration of midwives on the mistaken expectation of "influencing important details" have signally failed to amend the worst provisions of the Bill before Parliament, it is time that honestly mistaken supporters of such registration should cease to trifle with a public danger, and in view of the plébiscite recently taken by THE LANCET indicating the sense of a great proportion of his electors this meeting, regretting Dr. Glover's attitude of indifference to these considerations, invites him by resigning his seat and seeking re-election to afford to his constituents a just opportunity of reconsidering their relations to him.

It is pleasant to have the assurance conveyed in your covering letter that no personal unfriendliness is meant by such a resolution. I accept the assurance, though it is very difficult to construe the procedure of the gentlemen concerned in this matter as either reasonable or courteous. The impression produced on others affected by your views and methods may perhaps be gathered from the fact that two only of a large number of Members of Parliament whom you invited attended, and that the great profession to which we belong was, in the end, with its 23,000 members, represented by 17 persons, who thought it seemly to ask a Direct Representative to resign because of a disagreement with him as to the best means of dealing with the question of midwives.

I am sure nothing would more effectually surprise you or lower me in the esteem of the great body of the profession than that I should treat such a resolution seriously. I shall only remind my constituents generally that as a matter of fact my vote in THE LANCET ballot was given against this Bill and will still be given so until I am satisfied that the midwives to be licensed shall be required in all unusual cases to appeal for help to the medical profession.

It is only fair to the General Medical Council to say that it has in most important ways influenced the details of this

Bill. Even as the Bill stands at present the Council has secured a control over licensed midwives which would probably not have been conceded if Parliament had thought that the profession was represented by the 17 modest gentlemen who ask me to resign a trust which was given me for the third time by thousands of registered practitioners on the most explicit understanding that I would support such legislation under certain conditions.

Believe me, Gentlemen, yours very truly,
J. G. GLOVER.

F. S. Toogood, Esq., M.D. Lond., &c.,
John P. Henry, Esq., M.D. Dub.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

Reports to the Local Government Board upon Epidemic Enteric Fever in the Borough of Falmouth, by Dr. G. S. BUCHANAN.[1]—Many of those who have been accustomed to think of Falmouth solely as a "health resort" will, after reading Dr. Buchanan's report, have certain misgivings as to whether, in seeking the health which, in so far as nature is concerned, they may reasonably expect to find there, they may not be unfortunate enough to fall victims to one or another of the sanitary defects revealed in the report before us. The inqury here in question was apparantly set on foot through the instrumentality of 59 ratepayers of the borough who complained to the Local Government Board as to "diverse insanitary conditions" as well as of the quantity and quality of the water supplied to the inhabitants. We have here, indeed, an excellent example of a central authority coming to the assistance not only of certain ratepayers, who are unable to awaken their own town council to vigorous action, but also of the public at large.

The population of Falmouth is about 12,000 and the place is still an important "port of call," though in this sense it compares unfavourably with its notoriety in the old sailing days. Like many old Cornish towns Falmouth is not well-arranged from the view-point of space about houses, and doubtless there are many dwellings therein without the damp-proof course of modern days. We must, however, confess to no little astonishment at learning from Dr. Buchanan that even at the present time the by-laws in force in this district do not provide for these elementary precautions in new buildings. The sewers could not in the cases which the inspector examined be regarded as water-tight, and at times the joints were found to be quite open, and although parts of the sewage are subjected to what is known locally as "treatment," the state of the foreshore on to which the sewage discharges is, according to the report, "an intolerable nuisance." Certain house drains connected with good private dwellings were being exposed at the time of the inspection, and Dr. Buchanan, taking advantage of the circumstance, found them "seriously defective," faulty construction of house drains in Falmouth being, it appears, by no means a thing of the past. The water-supply, which is obtained from a gathering ground liable to suffer pollution, is in the hands of the Falmouth Water Company which supplies both Falmouth and Penrhyn with water. Certain filtering arrangements have within recent years been provided, but they are apparently somewhat crude, and there would be a difficulty, we gather, in carrying out Koch's maxims with regard to the filter-beds. Intermissions in connexion with a certain high level supply are frequent, and on every Friday there is a general pipe-mending which involves a turning off of the supply from both the high and low levels. The mains and service-pipes are often defective, and this fact, coupled with the unsound condition of the sewers and drains and with the frequent intermissions of supply, affords opportunities for the insuction of polluted matter which should be anything but reassuring to the inhabitants of Falmouth.

[1] Eyre and Spottiswoode. Price 1s. 6d.

During 1899 up to Sept. 30th there were 112 cases, yielding 12 deaths, of enteric fever, and these cases Dr. Buchanan divides into two groups, one of 38, the units of which were distributed fairly evenly over the first seven months of the year, and the other of 74, all of which were confined to August and September alone. In both groups the cases were almost exclusively restricted to a certain area of the town which is spoken of in the report as the "central area" and to this point reference will again be shortly made.

In seeking for the cause of the outbreak Dr. Buchanan passed in detailed review occupation, milk-supply, sewers, soil-pollution, and shell-fish, but after considering all the facts, as well as the possibility of the pollution of the public water-supply at its source, he is not inclined to accept any of these possible agencies as having had chief concern in the distribution of enteric fever in Falmouth during 1899. The confinement of the cases to the "central area" suggested some factor common to that area which was not shared in by the district outside such area. A theory of the local pollution of the water mains seemed to Dr. Buchanan to afford a key to the peculiar distribution of the disease, and he was able to demonstrate by an ingenious experiment that under certain conditions the existence of which are probable in Falmouth a direct insuction of water from polluted soil or from a leaking drain might well take place. It appears that when the water is turned off to allow of the usual weekly repairs a connexion is purposely established between the high and the low level supplies, and this weekly connexion furnished Dr. Buchanan with a clue which goes far to explain the local prevalence of the disease, more particularly the outbreak which occurred in August and September. Under the heading of "Measures Adopted in Repression of the Epidemic" Dr. Buchanan tells us "there is not much to chronicle." The cases in the earlier part of the year passed "almost unnoticed" by the Town Council, and when the disease became epidemic in August the presence of the visitors' season conduced rather to suppression of the facts than to efforts to combat the march of the outbreak. The alarm, however, led to certain measures being taken, notably perhaps to a gratuitous supply of "Jeyes' fluid" and the remedy, often "in a slipshod fashion," of defective drainage. The council have no isolation accommodation and no disinfecting apparatus, and no attempts were apparently made to procure the use of either. In 1898, we are told, the Town Council conceived the righteous idea of promoting a Bill in Parliament to purchase the undertaking of the Falmouth Waterworks Company, but the ratepayers refused to sanction the proposal, and it was whispered in Falmouth to Dr. Buchanan that the reason for this refusal was a mistrust on the part of the ratepayers "of the capacity of their own representatives for carrying out so large an undertaking." It is needless to mention in detail the excellent advice with which the admirable report we are noticing concludes, but we may perhaps express a wish that Falmouth may now recognise the responsibility which rests upon her, not only in regard to her own people, but to the greater public, the members of which are attracted to her shores.

VITAL STATISTICS OF LONDON DURING MARCH, 1900.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in each of the 43 sanitary areas of London. With regard to the notified cases of infectious diseases in the metropolis, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 6·6 per 1000 of the population, estimated at 4,589,129 persons in the middle of this year. In the three preceding months the rates had been 8·8, 8·0, and 7·0 per 1000 respectively. The rates were considerably below the average in Paddington, Marylebone, St. Giles, St. Martin-in-the-Fields, Strand, and Clerkenwell sanitary areas; while they showed the largest excess in St. Olave Southwark, Bermondsey, Rotherhithe, Lewisham (excluding Penge), Lee, and Plumstead. Three cases of small-pox were notified during March, of which two belonged to Hackney, and one to Poplar sanitary areas; three small-pox patients were admitted into the Metropolitan Asylums Hospitals during the month, and three remained under treatment on March 31st. The prevalence of scarlet fever showed a slight increase upon that recorded in the preceding month; among the various

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1900.
(Specially compiled for THE LANCET.)

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1900.

(Specially compiled for THE LANCET.)

Sanitary Areas.	Estimated population in the middle of 1900.	Notified Cases of Infectious Disease.										Deaths from Principal Infectious Diseases.										Deaths from all causes.	Death-rate per 1000 living.	Deaths of Infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.†	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON	4,589,129	3	877	856	—	250	2	12	321	—	2321	6·6	—	205	24	142	166	—	37	—	39	613	1·7	6726	19·1	138
West Districts.																										
Paddington	130,104	—	13	10	—	1	—	—	6	—	30	3·0	—	1	—	3	1	—	—	—	—	5	0·5	157	15·7	134
Kensington	173,603	—	21	30	—	3	1	—	17	—	72	5·4	—	13	—	3	1	—	—	—	3	20	1·5	195	14·6	124
Hammersmith	110,203	—	12	20	—	7	—	—	8	—	47	5·6	—	10	—	6	—	—	1	—	—	17	2·0	136	16·1	139
Fulham	136,383	—	32	47	—	11	—	—	9	—	99	9·5	—	17	—	4	3	—	—	—	1	25	2·4	164	15·7	74
Chelsea	96,715	—	17	9	—	1	—	1	3	—	31	4·2	—	5	1	2	1	—	—	—	1	10	1·3	132	17·8	116
St. George Hanover-square	81,133	—	22	11	—	3	—	—	4	—	40	6·4	—	—	1	1	1	—	1	—	—	4	0·6	102	16·4	102
Westminster	51,657	—	11	7	—	—	—	—	8	—	26	6·6	—	1	—	1	1	—	—	—	—	3	0·8	85	21·4	182
St. James Westminster	21,457	—	4	3	—	1	—	—	—	—	8	4·9	—	1	—	—	—	—	—	—	1	2	1·2	33	20·0	226
North Districts.																										
Marylebone	139,777	—	11	8	—	6	—	—	18	—	43	4·0	—	3	1	—	1	—	2	—	5	12	1·1	221	20·6	129
Hampstead	81,766	—	19	7	—	4	—	1	2	—	33	5·3	—	1	—	1	—	—	—	—	—	2	0·3	73	11·6	94
St. Pancras	245,651	—	23	30	—	15	—	—	9	—	77	4·1	—	25	1	4	6	—	3	—	4	43	2·3	401	21·3	136
Islington	351,541	—	80	27	—	12	1	—	26	—	146	5·4	—	16	1	6	7	—	—	—	2	32	1·2	470	17·4	126
Stoke Newington	35,718	—	12	8	—	2	—	—	3	—	25	9·1	—	—	1	1	—	—	—	—	—	2	0·7	36	13·1	120
Hackney	225,519	2	48	41	—	17	—	1	17	—	126	7·3	—	1	3	6	21	—	3	—	1	35	2·0	282	16·3	133
Central Districts.																										
St. Giles	36,870	—	1	2	—	—	—	—	1	—	4	1·4	—	1	—	—	—	—	1	—	1	3	1·1	67	23·7	131
St. Martin-in-the-Fields	11,865	—	2	1	—	—	—	—	—	—	3	3·3	—	—	—	—	1	—	—	—	—	1	1·1	18	19·8	222
Strand	22,748	—	1	1	—	—	—	—	2	—	4	2·3	—	2	—	—	—	—	—	—	—	2	1·1	41	23·5	242
Holborn	29,188	—	3	7	—	1	—	—	—	—	11	4·9	—	—	—	1	—	—	—	—	—	1	0·4	50	22·3	179
Clerkenwell	66,007	—	5	8	—	3	—	—	2	—	18	3·6	—	—	2	2	3	—	—	—	—	7	1·4	110	21·7	163
St. Luke	40,655	—	2	3	—	2	—	—	6	—	13	4·2	—	1	—	1	11	—	—	—	1	14	4·5	105	33·7	220
City of London	26,922	—	3	6	—	3	—	—	2	—	14	6·8	—	—	—	3	—	—	—	—	—	3	1·5	57	27·6	121
East Districts.																										
Shoreditch	120,641	—	21	31	—	5	—	1	11	—	69	7·5	—	5	1	4	7	—	—	—	1	18	1·9	211	22·8	160
Bethnal Green	128,831	—	24	30	—	5	—	—	11	—	70	7·1	—	10	1	7	12	—	1	—	3	34	3·4	211	21·3	155
Whitechapel	82,220	—	26	15	—	7	—	—	3	—	51	8·1	—	3	1	3	1	—	—	—	—	8	1·3	125	19·8	172
St. George-in-the-East	48,875	—	9	5	—	4	—	—	6	—	24	6·4	—	—	—	1	2	—	1	—	—	4	1·1	79	21·1	124
Limehouse	58,944	—	6	15	—	4	—	—	4	—	29	6·4	—	7	—	2	6	—	1	—	—	16	3·5	108	23·9	171
Mile End Old Town	113,781	—	14	14	—	5	—	—	7	—	40	4·6	—	6	—	4	3	—	1	—	—	14	1·6	176	20·2	110
Poplar	170,968	1	31	26	—	17	—	1	22	—	98	7·5	—	7	—	11	19	—	1	—	1	39	3·0	298	22·7	149
South Districts.																										
St. Saviour Southwark	23,854	—	5	10	—	—	—	—	1	—	16	8·7	—	3	—	—	—	—	—	—	—	3	1·6	43	23·5	217
St. George Southwark	60,597	—	11	20	—	7	—	—	4	—	42	9·0	—	3	2	4	5	—	2	—	2	18	3·9	148	31·8	199
Newington	125,178	—	18	28	—	7	—	—	7	—	60	6·3	—	7	1	7	5	—	—	—	1	21	2·2	208	21·7	131
St. Olave Southwark	10,909	—	5	1	—	1	—	—	1	—	8	9·6	—	—	—	1	3	—	—	—	1	5	6·0	29	34·6	156
Bermondsey	85,920	—	23	35	—	6	—	—	3	—	67	10·2	—	2	—	5	8	—	2	—	1	18	2·7	157	23·8	181
Rotherhithe	41,246	—	12	10	—	7	—	—	8	—	37	11·7	—	14	—	1	1	—	—	—	1	17	5·4	76	24·0	175
Lambeth	312,152	—	51	67	—	15	—	—	17	—	150	6·3	—	14	—	5	8	—	3	—	2	32	1·3	468	19·5	162
Battersea	178,100	—	43	34	—	25	—	—	9	—	111	8·1	—	4	1	2	9	—	7	—	1	24	1·8	244	17·9	111
Wandsworth	217,004	—	52	38	—	15	—	2	17	—	124	7·4	—	7	1	4	1	—	3	—	1	17	1·0	277	16·6	121
Camberwell	268,457	—	55	70	—	7	—	3	14	—	149	7·2	—	6	2	13	1	—	—	—	—	22	1·1	364	17·7	129
Greenwich	184,582	—	43	44	—	9	—	1	17	—	114	8·1	—	2	2	9	11	—	1	—	1	26	1·8	266	18·8	139
Lewisham (excluding Penge)	93,548	—	34	19	—	7	—	—	10	—	70	9·8	—	3	1	6	3	—	1	—	3	17	2·4	112	15·6	95
Woolwich...	41,600	—	16	4	—	—	—	—	—	—	20	6·3	—	1	—	1	2	—	—	—	—	4	1·3	69	21·6	168
Lee	40,722	—	8	22	—	2	—	—	1	—	33	10·6	—	—	—	4	—	—	1	—	—	5	1·6	45	14·4	127
Plumstead	65,558	—	28	32	—	3	—	1	5	—	69	13·7	—	3	—	3	1	—	1	—	—	8	1·6	77	15·3	111
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including 19 cases of membranous croup.

† Including deaths from membranous croup.

sanitary areas this disease was proportionally most prevalent in Stoke Newington, Whitechapel, St. Olave Southwark, Lewisham, Woolwich, and Plumstead. The Metropolitan Asylums Hospitals contained 1654 scarlet fever patients at the end of March, against 2797, 2126, and 1827 at the end of the three preceding months; the weekly admissions averaged 162, against 197, 180, and 152 in the three preceding months. The prevalence of diphtheria showed a further considerable decrease from that recorded in recent months; the proportional prevalence of this disease was highest in Fulham, St. Saviour Southwark, St. George Southwark, Bermondsey, Lee, and Plumstead sanitary areas. There were 1236 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of March, against 1679, 1572, and 1402 at the end of the three preceding months; the weekly admissions averaged 148, against 184, 189, and 165 in the three preceding months. The prevalence of enteric fever in London showed a continued decrease from that recorded in recent months; among the various sanitary areas this disease was proportionally most prevalent in Fulham, City of London, Poplar, St. George Southwark, Rotherhithe, and Battersea. The Metropolitan Asylums Hospitals contained 263 enteric fever patients at the end of March, against 406, 289, and 274 at the end of the three preceding months; the weekly admissions averaged 35, against 40 in each of the two preceding months. Erysipelas was proportionally most prevalent in Westminster, Marylebone, St. Luke, St. George-in-the-East, Poplar, and Rotherhithe sanitary areas. The 12 cases of puerperal fever included three in Camberwell, two in Wandsworth, and one each in Chelsea, Hampstead, Hackney, Shoreditch, Poplar, Greenwich, and Plumpstead sanitary areas.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various sanitary areas of the metropolis, the deaths occurring in the public institutions of London having been distributed among the sanitary areas in which the patients had previously resided. During the four weeks ending March 31st the deaths of 6726 persons belonging to London were registered, equal to an annual rate of 19·1 per 1000, against 27·3, 27·3, and 20·4 in the three preceding months. The lowest death-rates last month in the various sanitary areas were 11·6 in Hampstead, 13·1 in Stoke Newington, 14·4 in Lee, 14·6 in Kensington, 15·3 in Plumstead, and 15·6 in Woolwich; the highest rates were 23·9 in Limehouse, 24·0 in Rotherhithe, 27·6 in City of London, 31·8 in St. George Southwark, 33·7 in St. Luke, and 34·6 in St. Olave Southwark. During the four weeks of March 613 deaths were referred to the principal zymotic diseases in London; of these, 205 resulted from measles, 24 from scarlet fever, 142 from diphtheria, 166 from whooping-cough, 37 from enteric fever, 39 from diarrhœa, and not one either from small-pox, from typhus, or from any ill-defined form of continued fever. These 613 deaths were equal to an annual rate of 1·7 per 1000, against 2·1, 1·9, and 1·8 in the three preceding months. The lowest death-rates from these diseases last month were recorded in Paddington, St. George Hanover Square, Westminster, Hampstead, Stoke Newington, and Holborn sanitary areas; and the highest rates in St. Luke, Bethnal Green, Limehouse, St. George Southwark, St. Olave Southwark, and Rotherhithe. The 205 deaths referred to measles were 49 below the average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in Hammersmith, Fulham, St. Pancras, Limehouse, St. Saviour Southwark, and Rotherhithe sanitary areas. The 24 fatal cases of scarlet fever were less than one-half of the corrected average number; the greatest proportional fatality from this disease occurred in Hackney, Clerkenwell, St. George Southwark, Camberwell, and Greenwich sanitary areas. The 142 deaths resulting from diphtheria showed a slight decline from the average number in the corresponding periods of the ten preceding years; among the various sanitary areas this disease was proportionally most fatal in Hammersmith, City of London, Bethnal Green, Poplar, St. George Southwark, Lewisham, and Lee. The 166 fatal cases of whooping-cough were 113 below the corrected average number; this disease showed the highest proportional fatality in Hackney, St. Luke, Bethnal Green, Limehouse, Poplar, St. Olave Southwark, and Bermondsey. The 37 deaths referred to enteric fever were slightly in excess of the average number in the corresponding periods of the ten preceding years; among the various sanitary areas this disease was proportionally most fatal in St. Pancras, Hackney, St. George Southwark, Rotherhithe, Battersea, and Wandsworth. The 39 fatal cases of diarrhœa were 12 below the corrected average number; this disease showed the highest proportional fatality in Kensington, Marylebone, St. Pancras, Bethnal Green, St. George Southwark, and Lewisham sanitary areas. In conclusion, it may be stated that the aggregate mortality from these principal zymotic diseases in London during March was nearly 16 per cent. below the average.

Infant mortality in London last month, measured by the proportion of deaths of children under one year of age to registered births, was equal to 138 per 1000. The lowest rates of infant mortality were recorded in Fulham, St. George Hanover Square, Hampstead, Mile End Old Town, Battersea, Lewisham (excluding Penge), and Plumstead; and the highest rates in St. Martin-in-the-Fields, Strand, St. Luke, St. Saviour Southwark, St. George Southwark, and Bermondsey sanitary areas.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned staff surgeons have been promoted to be Fleet Surgeons in Her Majesty's Fleet:—William Manley Lory and William Spencer Lightfoot.

Surgeon E. J. Finch to the *Defiance*.

IMPERIAL YEOMANRY.

Herbert Whyte to be Medical Officer with the temporary rank of Captain.

SCOTS GUARDS.

Surgeon-Major George S. Robinson to be Surgeon-Lieutenant-Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel J. S. Macadam (r p.), A.M.S., is posted to Portsmouth for general duty in the Southern District, and Surgeon-Major E. T. Crouch, A.M.R., has been appointed to the medical charge of Fort Grange and Fort Gomer and Browndown Camp.

The undermentioned Majors to be Lieutenant-Colonels:—Frederick R. Barker, Alfred Keogh, Charles B. Hill, Henry J. Michael, Arthur W. P. Inman, Thomas M. Corker, Thomas B. Moffitt, Charles A. Webb, Henry Martin, Arthur E. J. Croly, Robert O. Cusack, William D. A. Cowen, Robert H. Forman, Samuel J. Flood, John Watson, Octavius Todd, James D. Day, John G. Harwood, Robert D. Donaldson, Henry L. E. White, Arthur H. Burlton, Edward North, George F. Poynder, George F. A. Smythe, Henry L. Battersby, Augustus Hewett, Peter Mulvany, Thomas F. MacNeece, Arthur P. O'Connor, Douglas Wardrop, George T. Goggin, John M. Jones, Alfred Asbury, Fitzroy B. Maclean, Raglan W. Barnes, and John Lees Hall.

MILITIA MEDICAL STAFF CORPS.

Surgeon-Lieutenant John Henry Porteus Graham, from 4th Volunteer Battalion Liverpool Regiment, to be Surgeon-Lieutenant.

VOLUNTEER CORPS.

Artillery: 1st Ayrshire and Galloway: Robert Currie Robertson to be Surgeon-Lieutenant. 1st Cumberland: Surgeon-Major J. Little resigns his commission, with permission to retain his rank and to wear the uniform of the corps on his retirement. *Royal Engineers:* 1st Gloucestershire: Charles Ewbank Lansdown to be Surgeon-Lieutenant. *Rifle:* 3rd Volunteer Battalion the Queen's (Royal West Surrey Regiment): Second Lieutenant Josiah Field Hall resigns his commission and is re-appointed Surgeon-Lieutenant. 1st Volunteer Battalion the Royal Fusiliers (City of London Regiment): John Russell Ryan to be Surgeon-Lieutenant. 2nd Volunteer Battalion the Prince of Wales's Own (West Yorkshire Regiment): Surgeon-Major S. Johnston to be Surgeon-Lieutenant-Colonel. 3rd (Dumfries) Volunteer Battalion the King's Own Scottish Borderers: George Duncan Logan to be Surgeon-Lieutenant. 3rd (Dundee Highland) Volunteer Battalion the Black Watch (Royal Highlanders): William Stevenson Malcolm to be Surgeon-Lieutenant. 2nd (South) Middlesex: The undermentioned gentlemen to be Surgeon-Lieutenants:—Edmund Percival Isaacs and Samuel Frederick Holloway. 1st (Hallamshire) Volunteer Battalion the York and Lancaster Regiment: Surgeon-Lieutenant D. G. Newton to be Surgeon-Captain; Sidney Frederick Barber to be Surgeon-Lieutenant.

2nd Volunteer Battalion the York and Lancaster Regiment: Francis Joseph Sadler to be Surgeon-Lieutenant. 2nd Volunteer Battalion the Durham Light Infantry: Surgeon-Lieutenant J. C. Potter resigns his commission.

VOLUNTEER MEDICAL STAFF CORPS.

The Manchester Companies: George Arthur Wright to be Surgeon-Lieutenant.

TRANSVAAL WAR NOTES.

The General of Communications, Cape Town, reports that the following officers of the Royal Army Medical Corps were discharged from hospital during the week ending March 25th:—Lieutenant H. Hime, Major Nicholson, Major F. A. Harris, Lieutenant G. Goddard, and Lieutenant G. Delap. Civil Surgeons: H. More and Skerrington.

Miss Dutton of Conway has collected £65 towards the establishment of a "Conway" bed in the Welsh Hospital.

TRANSVAAL WAR CASUALTIES.

It is officially stated that the initials of Lieutenant Irvine, reported killed at the action near Bloemfontein Waterworks on March 31st, should have been "G. H." and not "F. S." Lieutenant G. H. Irvine, R.A.M.C., attached to the Royal Horse Artillery, was killed at Sanna's Post. Such mistakes are, we fear, sometimes unavoidable, and sympathy will be extended to the friends of both officers.

THE NAVAL MEDICAL SUPPLEMENTAL FUND.

At the quarterly meeting of the Directors of the Naval Medical Supplemental Fund, held on April 10th, Inspector-General W. H. Lloyd in the chair, the sum of £72 was distributed among the several applicants.

DEATHS IN THE SERVICES.

Surgeon Arthur William Nourse, R.N., aged 26 years, at the Naval Hospital, Chatham, on April 8th. He was appointed surgeon to the General Depôt ship *Pembroke* on Oct. 28th, 1899.

Mr. G. E. Leary, M.R.C.S., L.R.C.P., who was educated at Mason's College, Birmingham, has been nominated as a Surgeon-on-Probation for the Royal Army Medical Corps by the Secretary of State for War and has joined the Army Medical School at Netley.

Lieutenant-Colonel J. T. Lewtas, I.M.S., who has been doing duty in the medical division of the Royal Victoria Hospital, Netley, has received orders to proceed to Woolwich for duty.

The s.s. *Majestic* came into the Southampton Docks on April 9th, bringing 350 invalids, most of the patients being men who formerly garrisoned Ladysmith. They were all admitted to the Royal Victoria Hospital, Netley.

On April 6th the s.s. *Shannon* arrived at Southampton from Bombay. She brought 360 invalids for the Royal Victoria Hospital, Netley.

On April 8th the s.s. *Greek* arrived at Southampton; she carried 176 invalids who were sent on to the Herbert Hospital.

OXFORD UNIVERSITY.—Mr. R. W. Payne, M.B., Christ Church, has been elected to a Radcliffe Travelling Scholarship of the value of £200 a year, tenable for three years.

ROYAL INSTITUTION.—Solid hydrogen was the subject of the Friday evening discourse delivered by Professor James Dewar before a crowded audience at the Royal Institution on April 6th. At the outset he remarked that his experiments had disproved the opinions hazarded long ago by many eminent chemists to the effect that hydrogen, if it ever were solidified, would be found to possess metallic properties. Among the numerous experiments shown was one in which liquid hydrogen was used to solidify liquid air in an apparatus on the principle of Wollaston's cryophorus. The liquefaction of hydrogen in a glass tube was also exhibited, an experiment which was of importance in connexion with the determination of its density. The solidification of hydrogen was then shown, liquid hydrogen under reduced pressure suddenly assuming the appearance of a white mass of solidified foam, the temperature of which was found to be −258° C., or 15° C. above the temperature of "absolute zero."

Correspondence.

"Audi alteram partem."

"THE STATISTICS OF THE ANTITOXIN TREATMENT OF DIPHTHERIA."

To the Editors of THE LANCET.

SIRS,—I am glad to see that in THE LANCET of April 7th, (p. 1030) Dr. de Havilland Hall has drawn attention to the Hon. Stephen Coleridge's criticism of Mr. Paget's remarks with regard to diphtheria antitoxin ("Some Accidental Omissions in (*sic*) Mr. Paget's Book on Experiments on Animals," p. 4). Mr. Coleridge in this widely disseminated pamphlet states that whereas Mr. Paget alludes to a whole mass of evidence from foreign sources, "he accidentally forgets all about Somerset House, where he could have found the following informing though melancholy figures":—

Total deaths from diphtheria,				1882	... ...		3992
,,	,,	,,	,,	1887	... ...		4443
,,	,,	,,	,,	1892	... ...		6552
,,	,,	,,	,,	1897	... ...		7654
Death-rate per 1,000,000 living from diphtheria,						1882... ...	152
,,	,,	,,	,,	,,	,,	1887... ...	160
,,	,,	,,	,,	,,	,,	1892... ...	222
,,	,,	,,	,,	,,	,,	1897... ...	246

In the next issue of *Treatment* I deal fully with the statistical side of the question and I need only point out here that although Mr. Coleridge's figures are correct and the quinquennial periods which he has chosen seem quite fair, if the figures for the years between 1892 and 1897 be inserted they show the very reverse of what Mr. Coleridge would have people believe. The following table is taken from the Registrar-General's report for 1897:—

TABLE G.—*Diphtheria and Croup: Deaths per 1,000,000 Persons Living (p. xxiii.).*

Year.	Diphtheria.	Croup.	Diphtheria and croup.
1882	152	175	327
1887	160	143	303
1892	222	76	298
1893	318	71	389
1894	292	58	350
1895	260	54	314
1896	292	51	343
1897	246	35	281
1898*	244	27	271

* The figures for 1893 are taken from the Registrar-General's report for 1898.

I cannot occupy your space in an inquiry as to the relationship between diphtheria and croup, especially as the question is discussed in the last Registrar-General's report (1898, p. xxii.) which states: "It is safe to assume that the greater part of the deaths referred in the certificates to croup, as well as some of those referred to laryngitis and to ill-defined sore-throat, were really due to diphtheria." The above table shows, therefore, that the death-rates from diphtheria and from diphtheria and croup together reached their highest point in 1893, *before the introduction of antitoxin treatment*, which in England was commenced in the latter part of 1894. Since then, with the exception of the slight irregularity of 1896, the death-rates from diphtheria and from diphtheria and croup have steadily declined, the figures for 1898 being most striking.

For London the statistics show the same reduction, and the *case mortality*, which is the only true test of the value of treatment, has fallen from 23·6 per cent. in 1894 to 14·8 per cent. in 1898. In spite of the increase of population, too, it is noteworthy that the *total deaths* from diphtheria in England and Wales have actually *decreased* from 9466 in 1893 to 7661 in 1898. The figures of Somerset House on which Mr. Coleridge relies, so far from supporting his statements, prove, if they prove anything, the very reverse. By cleverly choosing his years and by ignoring the admitted identity of croup and diphtheria Mr. Coleridge has managed

to adduce figures in support of his views which are quite unwarranted by the statistics. But there is a more serious aspect to this matter. It is inconceivable that the figures I have quoted were not before Mr. Coleridge when he was compiling his tables. The inference is therefore that he has suppressed them.

I am, Sirs, yours faithfully,
RICHARD T. HEWLETT.

Jenner Institute, S.W., April 9th, 1900.

To the Editors of THE LANCET.

SIRS,—Dr. F. de Havilland Hall in THE LANCET of April 7th affects to be "astounded" that I should "instruct the public" on the inefficacy of antitoxin as a cure for diphtheria by telling them that the Registrar-General's statistics show that the death-rate per 1,000,000 living has gone up instead of down since the treatment was introduced. He mentions the names of Dr. E. W. Goodall and Mr. J. L. Hague as holding opinions of a certain nature on the subject and he seems to think that the citation of individual opinions is a more scientific method of induction than reference to Government statistics. With the modern serum-injector if Government statistics do not endorse his hypothesis so much the worse for the statistics. A serum is invented, its value as a preventive of a disease is asserted, and forthwith the incredulous are called upon to prove its failure or accept the nostrum with a chorus of applause.

But surely if it is understood that the usual laws of evidence are to be inverted when the value of serums are discussed it is high time that some stern reprimand were administered to the officials at Somerset House who continue to "astound" the serum-injectors by thoughtlessly recording the fact that the death-rate per 1,000,000 living from the diseases prevented by serums ascends steadily contemporaneously with their employment. For if this new system of induction is to be maintained what condemnation can be too strong for a public department which has the effrontery to publish figures showing that during 1897 more people were killed by vaccination than died from small-pox, and that in 1898, which is the last recorded year, only 59 unvaccinated persons died from small-pox, while 107 vaccinated persons died from it, and 26 more were killed by vaccination itself. Fortunately, the general public never read the returns, and as long as they accept the statements of serum-injectors as facts and the serum injectors base their statements on their own sanguine opinions, the Registrar-General and his absurd figures may safely be disregarded. If, however, the public should ever develop an unwarrantable curiosity about the Somerset House figures, it will no doubt have to be explained that the rise in the death-rate in diphtheria that has synchronised with the introduction of antitoxin is most assuring, and that nobody but a fool would hesitate to accept it as a proof of the efficacy of the treatment. I am, Sirs, your obedient servant,

STEPHEN COLERIDGE.

National Anti-Vivisection Society, 92, Victoria-street, London, S.W., April 9th, 1900.

*** Dr. Hewlett's letter puts a proper value upon Mr. Coleridge's figures and deductions.—ED. L.

"THE TREATMENT OF ACUTE RHEUMATISM."

To the Editors of THE LANCET.

SIRS,—In the course of your editorial remarks on the above subject in THE LANCET of April 7th, p. 1069, you say that "Dr. T. J. Maclagan was the first in England to substitute salicin for the salicylates," thereby implying that the salicylates were in use before I used salicin. This is not accurate. If you will refer to my original paper published in THE LANCET of March 4th and 11th, 1876, you will see that I began to use salicin in the treatment of acute rheumatism in November, 1874, more than a year before anything was known of its treatment by salicylate of soda. My observations on the treatment of acute rheumatism by salicin and the German observations on its treatment by salicylate of soda were independent and contemporaneous. If there is priority I claim it for my 1874 cases, which were undoubtedly the first cases of acute rheumatism treated by any of the salicyl compounds. Your editorial remarks on April 29th, 1876, are more just to me than your recent ones on April 7th, 1900. You then said that "Dr. Maclagan explained in THE LANCET of March 11th how he came quite independently of, and prior to, any other physician to treat rheumatic fever with salicin."

The question of priority is not one of general interest or great importance. What is of importance is that the profession should recognise that salicin and salicylate of soda, though having a like destructive action on the rheumatic poison, have quite different actions on the system. Salicin is a bitter principle derived from the bark of the willow. It is a bitter tonic resembling quinine in taste and appearance and may usefully be prescribed as a bitter tonic in suitable doses quite apart from its anti-rheumatic action. It has none of the depressing action on the heart and on the nervous system which are so frequently found to follow the administration of salicylate of soda. On account of this depressing effect I, like every other observer, have frequently had to stop the use of the salicylates; I have never had to give up salicin. There may of course be some people who are intolerant of salicin as there are some who are intolerant of quinine, of opium, of ipecacuanha, or of any other drug, only I have never met with one. Whether or not the deleterious effects of the salicylates are due to impurities in the drug it is not easy to determine. Of this I am sure, that the natural salicylate as prescribed by chemists is as potent for evil as the artificial.

As anti-rheumatics, all the salicyl compounds, salicin, salicylic acid, saliretin, saligenin, oil of winter green, salicylous acid, populin, &c., are pretty much on a par. Probably the true anti-rheumatic agency is the radicle salicyl which is the basis of all. The question as to which compound we shall use is simply one of therapeutic convenience. The two most convenient are salicin and salicylate of soda. The point in favour of salicylate of soda is its solubility. The points in favour of salicin are that it is freed from suspicion of impurity and that it does not tend to depress the cardiac and nerve centres.

To get their full beneficial effects in acute rheumatism each should be given in large and frequent doses—from 20 to 30 grains every hour till fever and acute symptoms disappear; after that every two, then every four, and after a few days every six hours. This dose should be continued for a fortnight. It takes about an ounce of salicin or salicylate of soda to abate the acute symptoms. The more quickly that ounce is passed through the system the better. I generally do it within 24 hours.

I am, Sirs, yours faithfully,
April 9th, 1900. T. J. MACLAGAN.

SIR WILLIAM BANKS ON CANCER.

To the Editors of THE LANCET.

SIRS,—In his lecture on Cancer Sir William Banks said: "There have been attempts made on certain abstruse developmental grounds to overthrow the possibility of the hereditability of acquired diseased variations [modifications?] ..... but nothing has come of them." It would be interesting to learn what Sir William Banks thinks should come of them. What actually has resulted is that nearly everyone who has devoted serious attention to the subject is convinced that acquired modifications are not in the least heritable. The lecturer added: "A great deal of philosophical froth has been beaten up and much learned verbiage has been poured about, but I have never seen abstract philosophy do much in disease." Neither have I; but this is not a question of abstract philosophy, but of science founded on common sense and evidence. The school to which Sir William Banks belongs holds that acquirements are heritable. His own contribution to the question is that certain hypothetical modifications produced by cancer are heritable. The onus of proof rests with him and his school. His opponents cannot prove that acquirements are not transmissible, since it is logically impossible to prove a universal negative. But they say on developmental grounds that such transmission is wildly improbable. For twenty years they have called for evidence and have shattered all evidence hitherto produced. Sir William Banks has long studied the modifications produced by disease and the surgeon's knife; no man is better fitted to deal with the question; if, drawing on his vast experience, he can prove the transmission of even a single acquirement, he will confer immense benefit on science and will succeed where many famous thinkers and workers have

failed. His illustration of tuberculosis is decidedly not happy. He says, "If you were to take a fine, wholesome, clean-blooded man, the descendant of a race who had for generations been free from all morbid diathesis, and put tubercle into him, you could not make it spread. It would die out locally. It requires a distempered constitution, like a sour, impoverished soil, to give the appropriate pabulum for pathological weeds which seed and spread through it and ruin it. We know how the tubercle weed gets sown." Well, but the simple fact is that races that have longest been tainted with tubercle, the English for example, are precisely the most resistant to it, whereas races, wholesome, clean-blooded, the descendants of races which had for generations been free from all morbid diathesis, perish if you put tubercle into them. For example, the native races of America, Australasia, and Polynesia, to whom tubercle was unknown before we introduced it to them, become extinct if placed under conditions so favourable to the spread of the disease as those which normally obtain among Englishmen. Were acquirements transmissible the English should be the weakest against tubercle and the Polynesians the strongest. The contrary being the case, it is plain, in this instance at least, that acquirements have not been transmitted, but that there has been a considerable survival of the fittest. I greatly admire Sir William Banks's eloquence, but under the circumstances I do not think he should bring the charge of abstract philosophical froth and learned verbiage against his opponents. They at any rate insist on concrete evidence. Will Sir William Banks supply it?

I am, Sirs, yours faithfully,

G. ARCHDALL REID, M.B., F.R.S. Edin.

Southsea, March 16th, 1900.

"A PARASITIC CRUSTACEAN AS A FOREIGN BODY ON THE CORNEA."

To the Editors of THE LANCET.

SIRS,—In connexion with Dr. Rayner Batten's unusual case of a parasitic crustacean occurring on the cornea of a fishmonger (THE LANCET, April 7th, 1900, p. 1002), it may be of interest to say that early in 1899 I noticed that one of the pikes in the fish-house at the Zoological Gardens had what appeared to me to be a fresh-water crustacean on the front of the eye. If I remember aright, for I have not been to the Zoological Gardens since, the parasite was attached to the front of the right eye and exhibited lively movements of the limbs. Such cases are possibly well known to naturalists.

I am, Sirs, yours faithfully,

GEORGE PERNET.

Upper Gloucester-place, N.W., April 8th, 1900.

"SMALL-POX AND VACCINATION."

To the Editors of THE LANCET.

SIRS,—The letter from Sir Samuel Wilks in THE LANCET of April 7th will be read with interest and will lead, let us hope, to some attention being given by the profession to the removal of the prejudices which have developed, particularly among the working classes, against vaccination. Whether those prejudices had any reasonable foundation appeared to me to deserve inquiry, and as the out-patient department of a children's hospital supplies one with the means to study such a question as this as well as others connected with the evils of overcrowding and poverty I thought the vaccination question worth attention. I came to the conclusion that the whole system of public vaccination was being entrusted to those who really could not observe the care and devote the time and trouble required to secure the poor children upon whom they operate from some troubles, which no one appreciated more fully than Edward Jenner himself. I came to the conclusion from seeing between 2000 and 3000 children a year for 15 years that there were some reasons for the poor having to complain of the bad effects of vaccination.

It is just a century ago since Jenner published in 1800 in one volume, "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ," &c., and this contained the whole of his "First Treatise on the Variolæ Vaccinæ" published in 1798, his "Further Observations" (1799), and his "Continuation of Facts and Observations, &c." (1800). In his introduction to the second of these he makes this important remark: "To guard the public mind from prejudice and to enforce the necessity of the scrupulous precaution in the conduct of inoculation with vaccine matter I was induced to offer to the world 'Further Observations, &c.'" These three treatises are well worth reading, for they contain evidence that Jenner saw where troubles might arise and how to deal with them. On p. 135 we find the following: "Perhaps the difference we perceive in the state of the arms may be owing to some variety in the mode of action of the virus upon the skin of those who breathe the air of London and those who live in the country. That the erysipelas assumes a different form in London from what we see it put on in the country is, in fact, very generally acknowledged. In calling the inflammation that is excited by the cow-pox virus erysipelatous perhaps I may not be critically exact, but it certainly approaches near to it."

The chief cause of complaint that came under my personal observation at the hospital was the occurrence of some form of erysipelas which had been followed by various troubles. Those remedies which Jenner suggested for them would probably have been used if the children had remained under the care of the vaccinator, but as it is usual for no relations to exist after the second visit, that is, a week after vaccination between the child and the vaccinator, and nothing was done till some weeks later when the child was brought to the hospital, I could not but regret that our system of public vaccination has certain disadvantages which could easily be remedied and which are the cause of the prejudice against which Jenner was anxious "to guard the public mind." Let us hope that this will be done before long, and let the profession show that they appreciate the work of such a man as Edward Jenner and the interest taken by Sir Samuel Wilks in this very important and interesting subject.

I am, Sirs, yours faithfully,

ROBERT J. LEE.

Gunterstone-road, West Kensington, W., April 7th, 1900.

PROCEEDINGS AT THE CANNON-STREET HOTEL IN REGARD TO THE MIDWIVES BILL.

To the Editors of THE LANCET.

SIRS,—Your report of the meeting held at the Cannon-street Hotel on April 4th to protest against the Midwives Bill states that Dr. Lorimer Hart alleged that as chairman I gave him permission before leaving the meeting to propose a motion calling upon Dr. Glover to resign his seat as a Direct Representative on the General Medical Council. This is not accurate. After Dr. Glover's letter was read Dr. Lorimer Hart rose and said he wished to move a resolution arising out of Dr. Glover's letter, but that he might not interfere with the regular order of business he would ask my permission to postpone the motion until after the other business had been disposed of. I replied that as chairman I had no power to give permission; the matter rested with the meeting. I then asked for a show of hands as to whether Dr. Hart's request should be complied with and the vote was unanimously in favour of granting permission. Having another important engagement I was compelled to leave the meeting before Dr. Hart's motion could be brought forward, but in any case I should not have remained in the chair whilst a resolution reflecting upon Dr. Glover was being discussed.

I am, Sirs, yours faithfully,

GEORGE BROWN.

THE MIDWIVES BILL.

To the Editors of THE LANCET.

SIRS,—If a licensed midwife under the Bill has an abnormal case—say one requiring forceps or version and the administration of chloroform—and if her patient is unable to pay a medical man, how will the difficulty be got over?

Confinements that have not been booked are not readily undertaken by medical men unless the fee is assured beforehand. Will there now be a greater inducement to the medical man to attend on receiving a notice from the licensed midwife that his services are required to an abnormal case and when he feels that his time, trouble, and anxiety may bring in no fee—nothing but weariness of body? Unless the Bill before it becomes law makes adequate arrangements we shall have distressed relatives ringing up

all the medical men of a neighbourhood to obtain assistance which will only be given out of humanity and which will often, and rightly, be refused.

Licensed midwives attending cases from an institution will be able to obtain help if required, but I am referring to the midwife's private case where medical aid is required by the circumstances. I am, Sirs, yours faithfully,

FAIR PLAY.

"DIFFICULT DIGESTION DUE TO DISPLACEMENTS."

To the Editors of THE LANCET.

SIRS,—Your reviewer having found the record of cases tedious and the plan of the book not convenient for ready reference, no doubt was not able to spare enough valuable time to correctly quote the only passage cited, making the author write just what he does not. On page 16 of my little work I say: "For this reason let me premise my remarks on gastroptosis by stating at once that, for myself, the term is not fairly applied to a stomach in which the upper border of the fundus does not appear to fall below the level of the seventh costal cartilage at its most dependent point," &c. The remainder of the remarks made by your reviewer are so disparaging that I must ask you of your courtesy to publish this letter in order to correct the false impression which the mis-statement of my views would otherwise leave on your readers, some of whom are doubtless aware that a phonometer is a tuning-fork and so will be able to gauge the value of criticism by one who evidently displays less familiarity with the subjects discussed in the book than

Yours faithfully,

THE AUTHOR OF "DIFFICULT DIGESTION DUE TO DISPLACEMENTS."

April 7th, 1900.

*** Our reviewer regrets if he has misunderstood the author's definition of "gastroptosis," but the words in the review are not a quotation. The word "phonometer" means, according to Gould's Medical Dictionary, "an instrument for measuring the intensity of the voice or current of air inspired during phonation." Dunglison's "Dictionary of Medical Science" and the Standard Dictionary say the same. We do not know any authority for making the word mean something else.—ED. L.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Natural History of Anopheles.—The Famine.—The Plague in Calcutta and Bombay.

SOME recent observations with reference to the anopheles species of mosquito show that the original statements about their habitat will require modification. Their larvæ are to be found in ponds which never dry up and which contain small fish in abundance. Certain open ponds subject to considerable rippling from the wind have been found swarming with them, although it is true that in sheltered areas around floating obstacles they were still more numerous. As the larvæ hatch out day after day it has been found that kerosene oil only kills a certain number, that the effect is consequently only temporary, and that after a short period the pond can be found swarming with them again. These facts would seem to imply that the wholesale destruction of the breeding places of the anopheles is not so simple a matter as was supposed, and that after all drying up of every pond known to be their habitat is the only practical solution of the difficulty.

The numbers under famine relief continue to mount up—the total now being considerably over 5,000 000—otherwise little change has taken place in the situation in the distressed tracts since last week. There is some reason to fear that charitable relief has been in many instances much abused. There are said to be mills asking for labourers, but the labourers prefer to receive food and do nothing. Although labour is enforced in some districts before relief is bestowed, this is a point to which sufficient attention has not been given. Able-bodied men should be compelled to work. For example, it is reported that in the Bombay Presidency the numbers relieved were 932,524 workers and 269,621 dependents, and 92,303 gratuitously relieved in villages and poorhouses. Several relief works have been started during the week on tanks, roads, canals, and railroads. Expenditure has been incurred for the supply of fodder to affected districts and large loans have been sanctioned to certain affected native States amounting to something like £200,000 The high temperature now prevailing throughout western India is expected to favour an early burst in the south-west Monsoon. As usual the Bengal Presidency is free from this recurrent disaster and is blessed with abundant harvests.

Like the famine there has also been a great increase in plague. The total deaths throughout India last week from plague amounted to 4725. Over 3000 deaths occurred in Bengal. The Patna district reports 2044 deaths and Calcutta 744 deaths. In Aden there were 19 deaths. In Calcutta the death-rate has now reached 104·5 per 1000 per annum. In Bombay it still remains at the enormous rate of 170 per 1000 per annum. There are rather less cholera and small-pox than usual in Calcutta, but these diseases continue prevalent in Bombay. The plague deaths in Calcutta wholly account for the excess mortality. In Bombay, however, the excess mortality of over 2000 is hardly explained by the return of 780 deaths from plague, and the other epidemic diseases do not account for the difference. As I have repeatedly pointed out, these weekly returns of plague deaths in Bombay city are absolutely worthless, and it is time that some other system of recording should be adopted to bring the returns into harmony with existing facts. A much larger proportion of plague deaths was brought to light last year.

Since Jan. 1st there have been 2720 deaths from plague in Calcutta. In Bombay, allowing a very free estimate for deaths from other causes, there have probably been 13,000 deaths from plague, but the official figures are short of this number by at least 10,000. Rats are not nearly so numerous in Calcutta as in Bombay. It is reported that large numbers of dead and dying rats have been seen coincidently with the outbreak of plague in Sydney.

March 22nd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Sterilised Milk Depôts.

THE City Council have sanctioned the recommendation of the health committee to establish a depôt or depôts in suitable parts of the city for the preparation and sale of sterilised milk for infants and that £1000 should be placed at the disposal of the committee for that purpose. The idea was to endeavour to interest mothers in the better feeding of their children, with the view of counteracting the injury which is often caused by improper nourishment. The bottles which would be provided at the depôts would be properly cleansed before they were filled with sterilised milk, and would be again cleansed when brought back for refilling. It appeared that in those places where the experiment had been tried the best results had followed. The new departure is a step in the right direction and any honest attempt to grapple with the question of infant mortality in large cities will be welcomed.

The Liverpool Ladies' Charity.

At the annual meeting of the friends and subscribers of the Ladies' Charity and Lying-in Hospital the Lord Mayor deplored the lack of interest which was taken in this most deserving charity. The debit balance had now reached £800, or £100 in excess of the loss on the previous year. Last year 1489 out-patients had received medical attention, and in consideration of the advantages which they received in the matter of clothing, &c., an extended grant from the Hospital Saturday and Sunday Fund was strongly appealed for by the treasurer of the institution.

The Home for Epileptics at Maghull.

In response to the appeal made by the committee for funds in aid of the extension of the work of the home, allusion to which was made in a former issue of THE LANCET, donations amounting to £2500 have been already acknowledged by the honorary treasurer. Contributions amounting to £182 2*s.* have also been guaranteed annually for five years by Mr. William Rathbone, Dr. W. Alexander, and other friends in support of the institution.

Small-pox at the Liverpool Workhouse.

Several cases of small-pox have occurred at the Liverpool

Workhouse within the last fortnight. One of the ward-mistresses has been removed to Parkhill Hospital suffering from the disease.

Queen Victoria District Nursing Association.

The annual report for 1899 stated that the association employs 32 trained nurses who are located in different parts of the city. 131,009 visits had been paid last year, involving the nursing of 5939 poor patients. The expenses for the year had reached £2800, which was equivalent to 10*s.* for each case. It is pleasing to find that the association is in a prosperous condition. The homes for the nurses, of which there are four, are in every respect comfortable and healthily situated. The central home in Prince's-road contains the administrative department and is the gift of the David Lewis trustees. A substantial addition to the latter building is in course of construction. Much credit is due to Mr. Herbert J. Rathbone, the indefatigable honorary secretary, for his efforts in furthering the success of the association.

April 9th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Death of Sir Douglas Maclagan.

BY the death of Sir Andrew Douglas Maclagan the medical profession in Scotland have sustained a great loss and none the less because it is in a sense sentimental. Sir Douglas Maclagan's days of active work had been over for several years before death took him at the ripe age of 88 years; but his presence amongst us was a possession that we valued. He was a link with past men whose names are medical history, and was himself a remarkable type of a great physician of the old school. The funeral took place on Monday afternoon, April 9th, in the Dean Cemetery, Edinburgh. The Senatus of the university, representatives of the Royal College of Surgeons of Edinburgh, the Royal College of Physicians of Edinburgh (of both of which corporations the deceased had been president), and of other public bodies were present. The pall-bearers were Dr. R. C. Maclagan (son); the Archbishop of York (brother); Mr. P. S. Maclagan, Mr. C. P. D. Maclagan, Mr. D. D. Maclagan, and Mr. C. P. Maclagan (nephews); Mr. D. P. Maclagan (grandson); and Mr. T. T. Maclagan.

Sanitary Work on Deeside, Aberdeenshire.

Contracts have now been entered into for the erection of a district hospital at Braemar. A contract has also been entered into for the extension of the water and drainage works at Aboyne village and another for the extension of the water main in the village of Kincardine O'Neil. For all these works the plans were prepared by Messrs. Jenkins and Marr, C.E., Aberdeen.

Epidemic in Aberdeen.

Whooping-cough has assumed an epidemic form in Aberdeen. The number of fresh cases reported to the medical officer of health last week was 99.

April 9th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

An Honorary Degree for Sir James Reid.

THE Senate of the Royal University of Ireland met on April 5th, and after adopting an address of welcome to Her Majesty agreed that the degree of M.D. hon. causâ should be conferred on Sir James Reid, Bart., physician to the Queen. At a meeting of the President and Fellows of the Royal College of Physicians of Ireland held on April 6th the degree of honorary Fellow of the College was conferred on the same gentleman.

The Irish Hospital at the Seat of War.

Lord Iveagh received a telegram (April 2nd) from the Hon. Rupert Guinness, his eldest son, referring to the work of the Irish Hospital. Just after the hospital camp was fixed at De Aar a message came from Lord Kitchener requesting that five ambulances should be despatched to accompany his expedition against the rebels in the West. Mr. Stoker, Dr. Friel, Dr. Connihan, and Mr. Ilwaine, with 15 men and the necessary stores, were sent on without delay. This party has now returned to Naauwport after the completion of Lord Kitchener's operations. It is understood that the Irish Hospital will go forward to Bloemfontein as soon as the railway line is open for through traffic.

A New Nursing Home in Connexion with the City of Dublin Hospital.

Princess Christian performed the ceremony of laying the foundation stone of a new nursing home in connexion with the city of Dublin on April 9th. The Countess Cadogan and a brilliant assembly witnessed the proceedings.

Death of Major James Minniece, R.A.M.C.

It is with very sincere regret that I have to announce the death of the above officer of the Army Medical Corps in South Africa, who was an old student of the Belfast Medical School. Major James Minniece died on St. Patrick's Day, March 7th, from typhoid fever, at Ladysmith. Major Minniece was the youngest son of a Londonderry gentleman, Mr. J. A. Minniece, J.P., and after studying at Foyle College he went to Queen's College, Belfast, and in 1881 he graduated M.D., M.Ch. and L.M. of the Queen's University. For a short time he had charge of a dispensary in co. Donegal, but he went to Netley in 1886 and became in the next year a surgeon-captain. He was first stationed at Aldershot but afterwards spent a considerable time in Egypt. He was subsequently sent to India, being stationed at Rawal Pindi, but at the beginning of the present war he went with the 5th Dragoon Guards to South Africa and with them was besieged in Ladysmith, where, as stated above, he died. He received his promotion as major early in 1899. He was a great favourite when a student in Belfast and during his subsequent career in the Royal Army Medical Corps he did excellent work.

Important to Irish Dispensary Medical Officers.

At the Listowel Quarter Sessions, before Judge Shaw, a test case of considerable importance to dispensary medical officers, involving the question as to whether medical officers are bound to attend on red ticket "casuals" coming into their districts, was heard. Dr. J. T. Dillon, medical officer of the Listowel Dispensary District, sued Mr. Richard Walsh, for the recovery of a professional fee of £1 1*s.* for attendance at the request of the defendant on a man named John Reane, who was not a resident of his district. It appeared in evidence that Reane, who was a resident of the Larbert dispensary district, was beaten when returning from Listowel and came back to report the matter to the Listowel police. The constabulary had a fund at their disposal out of which they had frequently paid the plaintiff a fee for medical attendance on "casuals," but in this case, instead of drawing on the fund, the police went to the relieving officer, who issued a red ticket which led to the present action. Counsel for the plaintiff held that the relieving officer had no power to issue a red ticket to require the medical officer to attend a person not resident in his district. The solicitor for the defendant said that he could not resist the decree in this case, but he wished to call attention to the practice that had been carried on, so that in future relieving officers instead of issuing a ticket for relief under such circumstances should say to the police, "I know nothing about this man and you will have to get him relief out of your own fund." His Honour gave a decree with costs, including counsel's fee.

Rainfall in March in Belfast.

1·20 inches of rain fell on 13 days of March, while in the same month of last year there were only ten wet days, but with a total rainfall of 1·53 inches. Up to March 31st the rainfall has been almost three inches less than in the corresponding period of last year.

Memorial to Professor J. F. Hodges, M.D.R.U.I.

A number of the colleagues and friends of the late Professor Hodges met in the council room of Queen's College on March 29th, when it was decided to perpetuate his memory by placing his portrait in the examination hall of Queen's College. Professor John Purser and Dr. Joseph Nelson were appointed secretaries and subscriptions are not to exceed one guinea.

Pharmacy Prosecutions.

At the Fintona (co. Tyrone) Quarter Sessions, held on March 28th, the Belfast inspector of the Pharmaceutical Society of Ireland charged two individuals (master and employé) with keeping open shop for retailing poison—to

wit, strychnine—while they were not persons properly qualified to do so according to law. The bench fined each of the parties £5, one-third to go to the complainant and two-thirds to the society. It is probable from what was stated that owing to the fact that both parties had been punished for the same offence some part of the fine will be returned.

April 9th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Cystine in Water-supplies.

AT the meeting of the Academy of Sciences held on March 19th M. Armand Gautier presented a memoir by M. Causse of Lyons pointing out the significance of the occurrence of cystine in drinking-water as an indication of the presence of germs of typhoid fever, and describing a method of determining its presence by a reagent which produces with it an orange-yellow colour proportionate in its intensity to the amount of cystine contained in the water. By means of this reaction M. Causse has succeeded in estimating cystine quantitatively and in following out the varying proportions in which it exists in water. All the samples of water collected in houses where undoubted cases of typhoid fever had occurred, at La Guillotière, at Les Brotteaux, or in the central parts of Lyons, acquired an orange tint throughout the whole mass of liquid. The depth of colour, which was in a direct ratio to the proportion of cystine, seemed also to have a relation to the severity of the disease. The colouration of the water from the well of a house in the Avenue des Ponts, where three fatal cases of typhoid fever had occurred, was the deepest which M. Causse had obtained; the proportion of cystine was the highest which he had met with, the average being three centigrammes per litre during the warm weather. The proportion of cystine varied very distinctly with the season of the year. Frequently repeated experiments showed that the intensity of the colouration, and therefore the amount of cystine contained in the contaminated water, was greatest in September and October; from October onwards it diminished gradually, falling to the lowest point in February and March; it then increased, returning to its maximum at the end of the hot weather. The same remarks were applicable to the water of the Rhone as distributed by the water company. Compared with the wells at La Guillotière and Les Brotteaux, the amount of cystine in the water of the Rhone was estimated at about one-tenth part, but when the river overflowed its banks the proportion of cystine increased and in time of flood it became equal to, or sometimes even greater than, that contained in the worst well at La Guillotière; these fluctuations correspond with the fluctuations exhibited by typhoid fever, as is shown by statistics. Cystine in water was not only variable in amount, but it might almost completely disappear from certain waters, leaving only ammonia, sulphuretted hydrogen, and organic compounds to show that it had been there.

Paris Association of Female Students.

The number of female students, Frenchwomen and foreigners, in the Paris Faculties, including the Faculties of Science and Medicine, has increased so much during the last five years that some young Frenchwomen, Russians, and Roumanians have proposed to form themselves into the nucleus of a female association analogous to the General Association of the male students. The object of this new association will be to make the female students better acquainted with one another, to give assistance to those who are in need of it, and to provide something of the nature of a family circle, especially for those who having come from far and not possessing the means of frequently returning home lead a solitary existence in Paris during the long weeks of the vacations when study is necessarily interrupted. Only one of the female students of medicine in Paris is English.

Faulty Prescriptions.

Two cases which have just come before the courts, both in the same week, prove once more the danger of indistinctly written prescriptions and raise the often-debated question as to the apportionment of the responsibility between the medical man whose handwriting was bad and the druggist who has dispensed a prescription which was obviously incorrect. One of these cases was decided in Paris. The circumstances were that a draught contained an excessive dose of atropine and nearly caused the death of the patient. The druggist's assistant (*élève pharmacien*) was fined 50 francs (£2). The medical man not supposing that the serious effects were due to the draught was imprudent enough to taste it and almost lost his eyesight. For the injury thus sustained he brought an action against the druggist for 5000 francs (£200) damages but was awarded only 500 francs (£20). The Tribunal of the Seine held that the medical man was in fault—first, in having tasted the draught after having been made aware of its effect on his patient; and, secondly, for having written his prescription indistinctly and with a pencil. The other case was worse, for the patient died immediately after taking medicine which was intended to be purgative, but which in reality consisted of 20 grammes (three-quarters of an ounce) of tincture of nux vomica dispensed in conformity with a prescription written by a medical man. The authorities prosecuted both the medical man and the druggist and also the druggist's assistant by whom the medicine was dispensed. Judgment was given against all three. The medical man was fined 500 francs (£20) and ordered to pay 7500 francs (£300) damages; the druggist was fined 400 francs (£16) and ordered to pay 6000 francs (£240) damages; and the druggist's assistant was ordered to pay 100 francs (£4).

Inspection of Schools.

The Minister of Public Instruction has just appointed a commission for the consideration of questions of health and sanitation in schools (*lycées*). This commission will advise on all matters relating to the care of the pupils, especially in boarding-schools, as well as to the sanitary condition of the school premises. The commission will inspect the *lycées* of the Department of the Seine at least once a year, and will hold special inspections whenever circumstances require them. The members of the commission may also be sent to inspect other schools. After each inspection, at which the medical attendant of the school has to be present, the Commissioners will submit their observations to the Minister in a written report and will specify the improvements which they consider necessary.

April 9th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Foreign Medical Men in Italy.

DR. SANTINI, the author of the famous Bill by which foreign medical men not possessing an Italian qualification will be debarred from practising in Italy, was interviewed recently by a correspondent of the *Berliner Tageblatt*. He said that his Bill would probably become law this summer, so that at the beginning of winter there will be hardly any foreign medical men practising in Italy. The Italian Government hesitated a long time before approving of the Bill, but finally decided to do so because the proposition to allow Italian medical men to settle abroad under the same conditions has been declined by all the governments of Europe, Germany included. According to Dr. Santini it was a question of national honour to maintain that Italian medical men were not inferior to those of other countries. Foreign medical men would not be excluded from the soil of Italy; they were only invited to pass the same examinations as the native practitioners. The system was the same as that adopted by England. Dr. Santini then remarked that some foreign consultants in Italy had not become qualified even in their own country. He alluded to a well-known foreigner who had no degree at all and was nevertheless consulted by the wealthiest part of the foreign colony in Rome. His income was estimated at 150,000 francs (£6000). It was an objectionable circumstance that the practice of these foreigners could be transferred to successors for a money payment. Foreign visitors to Italy need have no fear that they would be deprived of adequate medical advice, for nearly all the younger Italian medical men knew the English and German languages perfectly. Dr. Santini then declared his intention of applying similar conditions to foreign dentists and druggists. His opinion, although of great interest from a psychological standpoint, will scarcely persuade anybody of the necessity for his Bill. The German press, both medical and non-medical, have

not hitherto taken much notice of the matter. This is the more regrettable as the German practitioners in Italy are scarcely inferior in number to the English and American. There are German medical men in nearly every one of the larger towns, from Venice and Milan in the north to Palermo in Sicily, and in the health resorts of the Riviera there is almost a superabundance of them. San Remo, for instance, has not less than nine medical consultants of German nationality, not to speak of those who come from other countries where German is spoken, such as Austria and Switzerland, and in Rome their number is still greater. It is therefore very desirable that favourable consideration should be shown to a number of professional brethren, some of them in the fulness of years, and naturally unwilling to present themselves before an examining commission which would certainly do everything to prevent them from passing.

The War in South Africa.

The German medical attachés, Dr. Schmidt and Dr. Krummacher, who were mentioned in my last letter as having returned home from the war in South Africa, have been speaking at a meeting of the Vaterländischer Frauen-Verein (the ladies' branch of the Red Cross Society). I was present at the meeting, which was attended by a great number of members and medical men, especially army medical officers. Princess Hohenlohe, daughter of the Chancellor, was in the chair. Both gentlemen spoke in very eulogistic terms of the British officers and soldiers generally and of the Royal Army Medical Corps specially. They said that they were treated with great courtesy by the British authorities, civil and military. On their arrival at Cape Town they were received at once by Sir Alfred Milner and had luncheon. They were then sent to the Modder River, where they were attached to an ambulance of Lord Methuen's division. On their arrival at the camp cheers were given for the German Emperor and complete cordiality prevailed between the British and the German officers during their stay with the British forces. Dr. Schmidt was astonished to see the soldiers going into action in high spirits and in as good humour as if they were on their way to a wedding. At the battle of Magersfontein, of which he was a spectator, the soldiers attacked the Boer lines with the greatest heroism. The members of the Royal Army Medical Corps exposed themselves to the shower of shell, so that several were wounded or killed. Dr. Schmidt saw about 250 wounded soldiers and helped the British surgeons in their work. He was much surprised to find that the British wounded could endure intense pain without complaining. Their self-control was really wonderful. After the unfortunate issue of the battle there was some depression, but no trace of the demoralisation which some continental newspapers had reported. There was no animosity against Lord Methuen who when he rode through the camp was greeted with the same enthusiasm as before. Dr. Schmidt then described the impressive spectacle of the burial of General Wauchope, the commander of the Highland Brigade, and the words spoken by Lord Methuen on this occasion. Dr. Krummacher, the other attaché, described the details of the British medical service, the field hospitals, and the great military hospitals at Wynberg, near Cape Town. The system of organisation very much resembled that of Germany. The mark "made in Germany" was often to be seen on the surgical dressings and, as the British officers jocularly observed, even the Boer shells were "made in Germany." Dr. Krummacher then drew attention to the army nurses, an institution unknown in Germany, where an organised corps of nurses belonging to the army does not exist, the nurses being supplied in time of war by the religious communities and by the Red Cross Association. When the attachés had finished their inspection of the medical arrangements at the base they desired to return again to the scene of war, but Lord Roberts and Lord Kitchener having meanwhile taken the command they were not allowed to do so and therefore returned home.

April 9th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Bubonic Plague.

THE bubonic plague still continues in Sydney and is causing the health authorities much anxiety. The first case discovered proved to be mild and recovered, but no sooner was the patient released from quarantine than another case was reported. This patient has since died. The real nature of the case was beyond dispute, most careful investigations by the expert bacteriologists of the Board of Health having proved that it was unquestionably one of true bubonic plague. The victim was a sailmaker living near the wharves and the infection is attributed to rats. Three cases have since developed in persons having business relation in Sussex-street, where the first case occurred. One of the patients, an employé of a steamship company, has died. All the people, to the number of 48, residing in the premises occupied by the infected persons have been placed in quarantine, and the houses have been isolated and disinfected. The authorities have issued circulars to householders with regard to the prevention of the plague, especially advising the extermination of rats and personal and household cleanliness. The other Australian colonies are subjecting all passengers from Sydney to rigid medical examination and are inaugurating a crusade against rats, and attempts are made to prevent rats escaping to land from vessels arriving from Sydney. The Board of Health in Melbourne is prepared to inoculate persons who desire it with Haffkine's prophylactic serum of which a full supply has been obtained. In Sydney the Government bacteriologist, Dr. F. Tidswell, applied for permission from the Government to import the bacilli of bubonic plague, cholera, and glanders and to propagate them and manufacture prophylactic serums, and after some consideration the application was granted. The supposed plague patient quarantined at Adelaide is now officially reported to have been suffering from typhoid fever with enlarged glands. It will be remembered that the profession in Adelaide from the first doubted the diagnosis of plague and that the local branch of the British Medical Association asked for an independent inquiry.

Adelaide Hospital.

The long-standing feud between the Government and the medical professional over the Adelaide Hospital seems likely to be settled at last. Negotiations have been in progress for some time past between a sub-committee of the Board of Management of the hospital and a sub-committee of the council of the Adelaide University with the object of arriving at some settlement of the despute. As a result of conferences it was decided to recommend to the board and council respectively the adoption of the following resolution:—

> On the nomination of the University the following offices be filled on the staff of the Adelaide Hospital: Two physicians, two surgeons, one gynæcologist, one ophthalmologist, two assistant physicians, two assistant surgeons, one of the four assistant officers being appointed joint pathologist.
>
> Further, every member of the senior staff, present or future, at the Adelaide Hospital shall be styled a clinical teacher, and his name shall appear in the University Calendar as such.

The recommendation has now been adopted by both the University council and the hospital board, and the way is now open for the re-admission to the staff of the profession, the resumption of clinical teaching, and the restoration of Adelaide Medical School to its former position.

Prince Alfred Hospital, Sydney.

The annual report of the Prince Alfred Hospital, Sydney, read at the seventeenth annual meeting of the governors and subscribers, showed that despite all the efforts of the directors to reduce expenditure, the deficit had increased during 1899 by £1149, and now stood at £2102. The income for the year was £15,704, of which the Government contributed £9536. The number of patients under treatment during the year was 3517. Of these 1854 were cured, 743 were relieved, 361 were unrelieved, 340 died, and 219 remained in the hospital on Dec. 31st last. The number of beds in the hospital was 236, the average number resident daily was 221; the mean residence of patients in days was 26, the average rate of mortality per cent. (deducting the 50 deaths which occurred in patients within 24 hours of admission) was 8·24; the rate of mortality per cent. over total cases under treatment was 9·66, the number of attendances in out-patients and casualty departments was 43,789; and the number of individual patients in these departments was approximately 11.000. The number of typhoid fever cases admitted was 146, as against 150 during the previous year. The mortality was 8·97 per cent. A tabulated illustration, showing the growth of the operative work of the hospital since its opening in 1883 was given in the report. In the year 1883 the number of operations performed was 147, or 13·75 per cent. of the number of admissions. Last year the number of operations was 1634, or 49·3 per cent. of the number of admissions.

The work of the operative department had during the year been greatly facilitated by the opening of a new operating theatre, in order to secure which, without immediate construction of new premises, the clinical lecture theatre had been sacrificed. The provision of an alternative operating-room could, in the directors' opinion, be no longer delayed, and they were reluctantly obliged to take the only means at their disposal for the provision of the needed accommodation by transforming the lecture theatre into a second operating theatre.

Obituary.

SIR ANDREW DOUGLAS MACLAGAN, M.D., LL.D. EDIN., LL.D. GLASG., F.R.C.P., F.R.C.S., F.R.S. EDIN.,

EMERITUS PROFESSOR OF JURISPRUDENCE AND PUBLIC HEALTH IN THE UNIVERSITY OF EDINBURGH.

BY the death of Sir Andrew Douglas Maclagan, which occurred at his residence in Heriot-row, Edinburgh, on Thursday, April 5th, the medical profession of the United Kingdom has lost one of its best known and most distinguished representatives.

Andrew Douglas Maclagan was born in Ayr in April, 1812, and had therefore reached the ripe age of 83 years at the time of his death. He was born of medical stock. His father, Dr. David Maclagan, surgeon-in-ordinary to the Queen in Scotland and Physician to the Forces, who served with distinction in the Peninsular War, was President both of the Royal College of Physicians of Edinburgh and of the Royal College of Surgeons of Edinburgh, and it is a singular thing that the father's extraordinary distinction of having filled the double presidency has only once been repeated, and then it was repeated by the son whose death has just occurred. Douglas Maclagan was the eldest of seven sons, one of the younger ones being the present Archbishop of York, and adds one more to the long list of distinguished men who have been educated at the Edinburgh High School and the Edinburgh University. When 19 years of age he obtained his diploma as a Licentiate of the Royal College of Surgeons of Edinburgh and shortly afterwards graduated in Medicine at the University. He then followed a practice adopted by many young men at that day who were determined to use their opportunities for the best, and made a tour of certain continental medical schools. 60 or 70 years ago there was not the same interchange of scientific knowledge and thought that now prevails under the influences of ready and cheap methods of travelling and a voluminous medical press, and a continental tour was the object of the hopes of those fortunate students whose careers gave sufficient promise of excellence to obtain for them the necessary funds from their parents or guardians. Young Maclagan was ambitious and had shown that he was bound to make his mark. He pursued his studies in Berlin, London, and Paris for several years, and upon his return to Edinburgh was elected assistant surgeon to the Royal Infirmary. Making, however, a particular study of therapeutics with a strong bias in favour of analytical chemistry and toxicology, he became a few years later—i.e., in 1845—lecturer on materia medica in the Edinburgh Extra-Academical School. Here his lectures attracted much attention by their lucidity, for he knew how to be exhaustive without being wearisome and how to impart information in a form in which it could be readily assimilated and easily recalled. In 1857 a *cause célèbre*, which is still remembered on account of its many sensational features, was tried in Glasgow, and Douglas Maclagan was retained for the defendant, Madeleine Smith, who was being tried for her life on a charge of poisoning her paramour. A verdict of "non-proven" resulted and Maclagan's method of giving his evidence marked him as an original observer, for he boldly traversed the opinion of Sir Robert Christison, the greatest living authority on poisons at the time, with regard to the consequences of using weak solutions of arsenic as a face-wash. Sir Robert Christison, who was then Professor of Materia Medica in the University, became Maclagan's great friend, constantly called him in to give assistance in forensic matters, and when, in 1862, the University chair of Medical Jurisprudence and Public Health became vacant through the death of Professor Trail used, and used successfully, his great influence to secure the appointment of Maclagan. During Maclagan's long tenure of the chair of Medical Jurisprudence he was the adviser of the Crown in many cases of the highest importance and as a witness his evidence was always marked by its extreme clearness and fairness. One of the most terrible cases in which he was concerned—the Prichard case—occurred shortly after he was elected to the chair of Jurisprudence. In this atrocious case a medical man murdered his wife and mother-in-law with different solutions of antimony and aconite, and Maclagan's report upon the organs of the deceased was of the first assistance in putting the rope round a cruel murderer's neck. From this time forward he was considered a leading British authority in toxicology, and every case in Scotland which required for its elucidation the employment of high chemical attainments combined with experience and great common sense was sure to be placed in his hands. Although he became as a consequence more widely known as a chemist than as a sanitarian, Maclagan carried out the duties implied by his professorship of Public Health every whit as conscientiously. He was an excellent teacher of his subject and a progressive authority, and on resigning the active duties of his chair in 1896 he received the special thanks of the University for the great stimulus which he had given to the teaching of hygiene in the University. His lectures on this subject were full and lucid, and some 16 years ago he opened a hygienic laboratory, now under the care of Dr. Hunter Stewart, which gave to the Edinburgh student those practical facilities for learning the technique of public health work which are now essential to the education of all aspiring to hold public appointments. We have said enough to show that during Sir Douglas Maclagan's long tenure of the chair of Medical Jurisprudence and Public Health in Edinburgh University, which extended over 34 years, he fulfilled the double duties of his office in an admirable manner.

His position in the two great medical corporations of his city was no less honourable. As has been pointed out he shared with his father, and with him alone, the distinction of being elected to the Presidency of both the Royal College of Physicians of Edinburgh and the Royal College of Surgeons of Edinburgh. He was President of the Royal College of Physicians in 1864 and 20 years later, in 1884, of the Royal College of Surgeons. He also served a term as President of the Royal Society of Edinburgh, to which body he was elected when quite a young man. He received the honour of Knighthood for his public services in 1886. But Sir Douglas Maclagan was not only a highly honoured physician and surgeon and a great medical jurist: he was a fine writer and a good musician, a poet, and a sportsman, so that it can readily be understood that a man with such wide interests, showing himself so excellent in such varied walks of life, should have a large number of friends and admirers. And this was the case. In all his public capacities he was highly appreciated and in private life his qualities and attainments won him a lasting place in the regard of all sorts and conditions of personal friends. His verses, which were first published half a century ago, under the title, "Nugæ Canoræ Medicæ," were for the most part playful dissertations in verse upon medical themes, but often he displayed imagination of a high order as well as an accurate ear for phrasing. Among the poems is the "Alma Mater" which, in Sir Herbert Oakeley's setting, is known to all Edinburgh students, and the "Battle o' Glen Tilt," which was inspired by the attempt of the Duke of Argyll to deprive the public of a right of way along a beautiful Perthshire glen. He was a sound classic. His knowledge of music was turned to account as President of the Musical Society of the University. He was one of the earliest to join the Volunteer movement and was a Surgeon-General of the Queen's Bodyguard for Scotland. He was, in short, a brilliant, many-sided man, whose death leaves a gap that cannot be filled.

He was buried on Monday, April 9th, at the Dean Cemetery, Edinburgh, among the pall-bearers being his son, Dr. R. C. Maclagan, and his brother the Archbishop of York.

ST. GEORGE MIVART, PH.D., F.R.S., F.L.S., F.Z.S., M.D. LOUVAIN (HONORIS CAUSÂ).

AS we briefly announced last week, St. George Mivart, the well-known zoologist, died at his London residence somewhat suddenly on April 1st. He was born 72 years ago and

was educated at Harrow and King's College, London. It had been intended that he should go to Oxford, but having become a Roman Catholic while still a lad he was sent to complete his education at St. Mary's College, Oscott. In 1851 he was called to the Bar at Lincoln's Inn, but he never practised, and ten years later, having taken up scientific study as his life-work, he was appointed lecturer on Comparative Anatomy at St. Mary's Hospital. In 1867, in recognition of his excellent work in structural anatomy, he was elected a Fellow of the Royal Society, and from this time forward he continued to add to exact scientific knowledge by careful observations.

In such obituary notices as we happen to have seen of St. George Mivart most stress has been laid upon those of his works which appeal to the reading public generally. It is natural that this should be so. But the true reputation of the deceased anatomist and philosopher really rests upon a long series of careful anatomical researches into the structure of vertebrated animals. In the long run it will be found that actual contributions to exact knowledge are the most lasting claims to remembrance and that theoretical suggestions—leaving popularisations of science, of course, entirely out of consideration as merely of passing interest—are sometimes apt to blur a reputation. It may be that Mivart will be, at least for a time, chiefly remembered as an opponent of the hypothesis of natural selection and as an exponent of other philosophical views; but this reputation will be by no means so enduring as that which can be justly based upon his detailed memoirs on the structure of men and apes and of many other groups of mammals, birds, reptiles, and amphibians. It is to us a matter of regret that so few men of science are adequately appreciated by the writers into whose hands the duty of reminding the public of their principal works falls. An article upon a burning popular question or a lecture given to a large audience upon some important occasion is apt to produce an impression upon the unscientific mind far beyond the intrinsic value of the occasion, and the biographer falls under such influences. The "Lay Sermons" of the late Professor Huxley, for example, created a reputation for their author which it will take time to efface and to replace by that due to his solid contributions to zoological fact. So far as the greatness of men of science is concerned it cannot be too clearly stated that their position ought to rest upon their contributions to their subject and not upon their casual utterances upon disputed topics of temporary interest. In saying this it is unnecessary to observe that absolutely no criticism is intended upon the late St. George Mivart's writings upon theological questions, upon his numerous articles in magazines, or upon his admirable public lectures. All that is intended is to convey our regret that the solid work of Mivart's lifetime has been somewhat belittled by the great importance that has been attached to his controversial attitude with regard to other matters. For Mivart, the popular controversialist, was above all things the exceedingly accurate observer when dealing with his own subject. He was deeply impressed with the necessity for omitting no detail, and the careful study of such papers as those upon the skeleton of the struthious birds and the pelican family, published in the Transactions of the Zoological Society of London, show admirably the surprising amount of new facts available for comparative purposes that he was able to extract from types which, it might have been thought, were so well known as to be scientifically exhausted. Minute differences and minute resemblances were clearer to his extremely accurate observing powers than to many anatomists of distinction. Very little in the way of recording new fact is left to succeeding naturalists in the animals with which he dealt. He did not begin his work of this kind until the "sixties." At that comparatively late period a vast amount of facts had been recorded and he had before him such skilled and enormously industrious investigators as Cuvier, Meckel, Müller, Owen and many others. The anatomist of 30 and more years ago had a huge and unexplored territory before him if he turned to the invertebrates, but those whose studies led them to prefer the vertebrates had to add to the volumes of fact accumulated by the illustrious observers just mentioned as well as a crowd of less-known persons. This must be borne in mind in reflecting that at the beginning of the century Cuvier was able to say that he made a discovery before breakfast every day. St. George Mivart could not say this and he wrote comparatively few memoirs, something like 50 in all. It is, however, a harder thing to add to what is known about familiar animals than to explore for the first time an entirely new creature. And this is precisely what Mivart did and did frequently. He added to our knowledge of the apes, particularly of the anthropoids; of the insectivora in a longish series of elaborate memoirs; of all the groups of carnivorous animals; of many rodents such as the Canadian urson, the agouti, and others; and of the lemurs and some other mammals. In birds we have to thank him for much work upon the skeleton of the ostrich tribe, which has already been referred to, as well as of the pelicans and cormorants, and finally numerous types of the lower vertebrates were subjected to careful analysis by him. In the medical profession the value of his admirable work was always fully recognised and our readers will join with us in regretting that death has put a term to his labours.

JOSEPH EDWARD KENNY, L.R.C.P., L.R.C.S. EDIN., L.A.H. DUB.

MR JOSEPH E. KENNY, who added to the labours of his calling the duties of a public man in Ireland, died in Dublin on April 9th. Born in 1845, he received his medical education in Dublin and in Edinburgh. Some two years after qualifying, and while he was medical officer at the North Dublin Fever Hospital, he distinguished himself by taking an energetic part in the endeavour to stamp out a small-pox epidemic which was then raging in the city. He became prominently connected with the Irish Nationalist party and at different times he held the office of treasurer to the Land League, the National League, and the Tenants' Defence Association, as well as to the Mansion House Evicted Tenants' Committee. In 1881 he was arrested as a "suspect" and was in consequence dismissed from his post as medical officer of the North Dublin Union. Subsequently, however, he was reinstated and at the general election of 1885 he was returned as a Member of Parliament for South Cork, which constituency he continued to represent for seven years. He was one of Mr. Parnell's most intimate friends, and when the split in the Irish party came he remained his follower. In 1892 he successfully contested the seat for College Green, Dublin, but retired from Parliament in 1896.

Mr. Kenny was a Fellow of the Royal Academy of Medicine in Ireland, and among the appointments which he held were those of Examiner in Medical Jurisprudence to the Apothecaries' Hall of Ireland, consulting physician to Maynooth College, visiting physician and medical officer of health to No. 2 North City Dispensary, visiting medical officer to North Dublin Union Hospital, and physician to the North Dublin Union Small-pox Hospital. He was also coroner for the city of Dublin. Although so much occupied as a politician he took the greatest interest in works of charity and benevolence in the city, and discharged his duties as coroner with great ability and success, winning the regard of all members of the medical profession. He had been for a long time in a delicate state of health; his death, however, was quite unexpected, and occurred after a brief illness of a septicæmic nature following upon the extraction of some teeth.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At the primary examination held in April the following candidates passed in the subjects indicated:—

PART I.

Biology.—E. Renouf, Royal Free Hospital; and J. A. Renshaw, Manchester.

Chemistry.—B. F. Board, Royal Free Hospital; L. V. Hill, Sheffield; R. L. Jones, Charing Cross Hospital; C. Kellgren and D. Mann, Royal Free Hospital; J. E. Mondon, Glasgow; E. Renouf, Royal Free Hospital; J. A. Renshaw, Manchester; C. A. Sampson; and J. M. Worswick, Manchester.

Materia Medica and Pharmacy.—T. M. Burton, Royal Free Hospital; W. H. Cotton, Dublin; A. T. Harvey, London Hospital; F. B. Joscelyne, Leeds; J. A. Renshaw, Manchester; and C. M. Scott, Royal Free Hospital.

PART II.

Anatomy.—C. E. Adams and C. M. L. Cowper, Guy's Hospital; L. Denny, Royal Free Hospital; E. M. de Wilton, St. Mary's Hospital; W. Garton, Westminster Hospital; W. Hunter, Durham; H. Jacques, London Hospital; F. H. Maberly, Birmingham; H. J. May, London Hospital; F. Murray, Royal Free Hospital; A. E.

Phelps, Cambridge and St. Thomas's Hospital; C. H. Pring, Bristol and Westminster Hospital; and W. P. Taylor, Sheffield and Bristol.

Physiology.—C. E. Adams and W. H. Bush, Guy's Hospital; P. S. Cooke, Charing Cross Hospital; C. M. L. Cowper, Guy's Hospital; L. Denny, Royal Free Hospital; A. W. Ellis, Edinburgh; H. R. Grellet, Guy's Hospital; H. Jacques, London Hospital; S. A. Mahmood, University College Hospital; H. P. Margetts, St. Bartholomew's Hospital; S. Newmark, Edinburgh; H. A. Parker, St. Thomas's Hospital; A. R. Phelps, Cambridge and St. Thomas's Hospital; and C. H. Pring, Bristol and Westminster Hospital.

UNIVERSITY OF ABERDEEN.—At the graduation on April 4th the following degrees and diploma were conferred:—

Degree of Doctor of Medicine (M.D.).—Frank Beaton, M.B., Hirst, Morpeth; Hugh Gordon Cowie, M.A., M.B., Turriff; *Arthur Burness Dalgetty, M.B., Madabpore, Adampur, S. Sylhet, India; George Brebner Scott, M.B., London; and David Simpson, M.A., M.B., Major I.M.S., Comibatore, Madras Presidency, India.

* Thesis considered worthy of "Commendation."

Degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) (New Ordinances).—With First-class Honours: †Henry Fraser, Aberdeen. *With Second-class Honours:* †Henry Peterkin, M.A., Aberdeen; Herbert Bell Tawse, Aberdeen; and Arthur Westerman, Aberdeen. William John Ironside Bruce, Dingwall; William James Cale, M.A., Aberdeen; Robert Carnegie, Peterhead; John Catto, Fintray, Aberdeenshire; Arthur Robertson Davidson, Kirkhill, Elion, Aberdeenshire; Hugh Allan Davidson, Dunnydeer, Insch, Aberdeenshire; John Watt Duncan, M.A., Aberdeen; Sylvester Davidson Fairweather, M.A., Mintlaw, Aberdeenshire; George Greig Farquhar, Aberdeen; John Forbes, Mains of Fyvie, Fyvie, Aberdeenshire; John McCalman Fraser, M.A., Aberdeen; Kenneth Fraser, Inverness; William Nusum Houghton, London; Wilfrid Ernest Lawson, Aberdeen; David Mitchell Macdonald, Aberdeen; John McKenzie, M.A., Dunmail, Cults, near Aberdeen; Ernest Hunt Nash, Holmleigh, Stafford; †Wm. Douglas Pringle, Alexandria, Egypt; John Richardson, West March, Monifieth, Forfarshire; James Andrew Simpson, Alford, Aberdeenshire; Harold Traill Skae, Kirkwall, Orkney; †Robert Alex. Slessor, M.A., Aberdeen; Charles Lawson Smith, Aberdeen; Harry Emslie Smith, Summerhill, Stocket, Aberdeen; Arthur Leslie Sutherland, M.A., Aberdeen; James Taylor, M.A., Toux, Mintlaw, Aberdeen; and James Miller Swanson Wood, Torry, Aberdeen.

† Passed Final Examination "with distinction."

Degrees of Bachelor of Medicine (M.B.) and Master in Surgery (C.M.) (Old Ordinances).—Joseph Hadfield, Hadfield, near Manchester; Francis Walker Moir, Cults, near Aberdeen; Douglas Whimster Keiller Moody, Montrose; William Mitchell Smith, Strichen, Aberdeenshire; and William Peters Young, Aberdeen.

Diploma in Public Health.—James McRae Cowie, M.B., Turriff; ‡James Dawson, M.A., M.B., Rathen; Alfred James Hynd, M.B., Aberdeen; James Alex. Stephen, M.A., M.B., Elgin; and Alexander Urquhart, M.A., M.B., Old Meldrum.

‡ "With credit."

THE WOOD GREEN AND DISTRICT MEDICAL SOCIETY.—At a special general meeting of this society held on April 4th the following resolutions were unanimously adopted:—

1. That the Wood Green and District Medical Society, having carefully considered the present and proposed new rules of the National Deposit Friendly Society, Limited, consider that, to make that society one which it can recommend to the profession it shall alter its rules as regards medical pay as follows. (*a*) That each "intermediate visit in dangerous cases" shall be paid for at 2*s.* 6*d.* per visit. (*b*) That the removal of cancerous or other tumours of magnitude be paid for at the rate of £5 instead of £3. (*c*) That there shall be a minimum fee for attendance in midwifery cases as follows—(1) for patients drawing up to 3*s.* per day sick pay, ordinary labour £1 1*s.*; instrumental labour or cases of version, £1 11*s.* 6*d.*, major operations excepted (where anæsthetic is used 10*s.* 6*d.* extra on above fees); (2) for patients drawing from 3*s.* to 5*s.* per day, 10*s.* 6*d.* extra shall be charged on above fees; (3) for patients drawing over 5*s.* per day, £1 1*s.* extra on above fees. Also that such fees shall be paid by the society direct to the medical attendant and deducted from patients' "sick pay" or "deposit" if sick pay be insufficient. (*d*) That the fee to be paid by all candidates for admission shall be at least 2*s.* 6*d.* for their medical examination for entry.

2. That there is no reason why "medical officers" should be appointed for districts, inasmuch as all registered medical practitioners are eligible to attend members and sign all certificates and that by appointing a particular medical man as "medical officer" he is given an undue preference over other practitioners as evidenced by the proposed new rules, iv., sec. 6, xvi., sec. 14.

3. That the certificate of health of candidates for admission shall be sent direct to the District Secretary and not returned to the candidate.

4. That the patient may obtain the advice of a consulting surgeon upon the same terms as proposed in new rule (xvi., sec. 14, sub-sec. 5) *re* "consulting physician."

5. That no member be eligible for medical pay at above rates (rule xvi., sec. 14, sub-secs., 1, 2, 3, 4, 5) whose average income exceeds £5 per week.

6. That copies of the above resolutions be sent to the medical press, the Ilford Medical Society, and the East Suburban Medical Protection and Medico-Ethical Society, Limited.

CENTENARIANS.—Mrs. Wells of Kingsmead-terrace, Bath, who has just died, had only a few weeks ago celebrated her one hundred and third birthday. She was born in 1797 at East Knoyle, Wiltshire. Bath still possesses a centenarian in Mrs. Priest, who was 103 years of age last August.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—A meeting of the Northern and Midland Division will be held at the County Asylum, Whittingham, near Preston, Lancashire, on April 18th. Tickets should be taken for Grimsargh station, from which a private train runs right into the asylum grounds. Mr. F. Perceval will provide lunch at 1 P.M., after which members will be shown round the asylum by the medical staff. The business meeting will be held at 4 P.M. Mr. G. W. Mould (Cheadle) will open a discussion on the new Lunacy Bill. Papers will also be read by Mr. Francis O. Simpson of Rainhill Asylum and by Miss Catherine M. Blackwood, L.R.C.P. Edin., of Wadsley Asylum. Members will dine at the Park Hotel, Preston, at 7.20 P.M.

EAST LONDON NURSING SOCIETY.—The annual meeting of the friends and supporters of this society will be held at the Mansion House on Tuesday, April 24th, at 3 P.M., when it is expected that the Lord Mayor will preside. The society, the object of which is to provide nurses for the sick poor in their own homes in the East-end of London, has nursed during the year 5306 cases, each necessitating repeated assiduous visits. Among the 5306 cases nearly 900 were those of men who have thus been helped to regain strength and with it the power of maintaining themselves and their families. The income from annual subscriptions has increased, but there has been a considerable falling off in donations. But for an unexpected gift there would have been a deficit on the year's working.

BRIGHTON, HOVE, AND DISTRICT BRANCH OF THE NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN.—The financial statement of this branch for the past year shows receipts amounting to £325 10*s.* 11*d.* (including subscriptions, donations, Children's League of Pity, &c., £322 4*s.* 11*d.*) and expenditure, £202 12*s.* 4*d.* £122 18*s.* 7*d.* have been remitted to the parent society, as against £231 in the previous year. During the past 12 months more work has been done by the society in Brighton and Hove than ever before and it is satisfactory to know that 700 children have been made happier during the year through the exertions of the local branch of the society. Out of 300 cases affecting 700 children there have been only 12 prosecutions. In all other cases warnings and supervision have brought about the desired results.

BRISTOL EYE HOSPITAL.—The eighty-ninth annual meeting of the governors of this institution was held on March 28th, under the presidency of Mr. Richardson Cross. The medical report stated that 364 in-patients and 4975 out-patients had been treated during the year. The financial statement showed that the ordinary income amounted to £1022 and there was now an adverse balance of £499. The committee reported that a new storey was being added which would provide better sleeping accommodation for nurses and servants, some small wards for patients, and a good operating theatre. A new wing was also being built which would contain a sitting-room for nurses and a new operating theatre for out-patient cases. The approximate cost of the alterations will be about £6000, towards which £2500 have been received from private collections, and the committee appeal to the public for further subscriptions.

PREVENTION OF TUBERCULOSIS.—The annual meeting of members of the Devon and Cornwall branch of the Association for the Prevention of Tuberculosis will be held at the Guildhall, Plymouth, on April 19th. The Earl of Mount-Edgcumbe is announced to preside. The report of the executive committee will be presented and a motion in favour of the provision of a sanatorium for the treatment of pulmonary tuberculosis amongst the poorer classes will be discussed. A deputation of the Executive Committee have waited upon the Sanitary Committee of the Plymouth Town Council and urged the adoption of a scheme for the voluntary notification of "consumption." The scheme met with the full approval of the Health Committee and the medical officer of health, and was recommended for adoption to the town council.

PRESENTATION TO A NURSING SISTER BY MEDICAL MEN.—A testimonial, engrossed and illuminated on parchment, has been made to Miss May Anderson, the sister-in-charge of nursing at the Government Hospital in Fiji, by the medical officers of that colony. Miss Anderson, who began her training at the same hospital in 1894, has risen through successive steps of promotion to be practically the matron of the institution, though the position is not so

styled, and after a trying season of heat and rain and a number of anxious cases from the naval squadron at Samoa to nurse through wounds and typhoid fever she was granted vacation leave to visit Australia for rest and health. The opportunity was taken by the medical staff to express their appreciation of Miss Anderson's high qualities as a nurse and fellow-official, and the parchment was accompanied by the gift of a free passage to Australia and back by mail steamer, together with a purse of sovereigns.

MEDICAL MAGISTRATES.—At the Somerset Quarter Session on April 4th Mr. J. G. Douglas Kerr, M.B., C.M. Glasg., took the oath of office and qualified as a county justice.—The Lord Chancellor has placed the name of Mr. S. Stretton of Kidderminster upon the list as a Justice of the Peace for the county of Worcester.

VACCINATION LAW.—At Liskeard County Sessions held recently two parents were summoned for neglecting to have their children vaccinated. The solicitor who appeared for the prosecution stated that the children were born in 1893 and 1896 respectively. Mr. H. S. Schultess Young, who appeared for the defence, took the technical objection that the summons was issued under the wrong section, since Section 2 of the Vaccination Act of 1871 stated that complaint could be laid at any time within 12 months of the matter of complaint having arisen and not subsequently. In these cases the causes of complaints arose when the children were three or six months old, and therefore the summonses were several years out of date. The bench of magistrates upheld Mr. Young's objection and dismissed both cases.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Midwives Bill.

At the sitting of the House of Commons on Friday, April 6th, a state of things arose not unlike that which led to the unexpected second reading of the Midwives Bill, which almost resulted in a further advance of the measure. When the House met at 3 o'clock in the afternoon it was confronted with a heavy programme of Government business, comprising the motion for the Easter adjournment and seven Government orders. This programme, to the surprise of all concerned, was got through by 11 o'clock—that is to say, one hour before the conclusion of the time set aside by the rules of the House for the discussion of contested business. Next on the notice paper stood four Bills promoted by private Members—the first a small Bill amending the Scottish Local Government Act of 1894, the second the Midwives Bill as amended by the Standing Committee on Law, the third the Bill for raising the flash point of petroleum oil, and the last a measure dealing with liquor licences in Ireland. Alert to the opportunity promised them, the promoters of the Midwives Bill—Mr. Heywood Johnstone, Mr. Schwann, and others—were in their places, prepared apparently to go on with their Bill if it were reached. Sir Walter Foster, Mr. Lloyd George, and Mr. T. P. O'Connor were also present. In due course the first Bill was discussed. Its chief promoter moved the second reading and the Lord Advocate intimated opposition on behalf of the Government. Then a curious thing happened—curious to those unfamiliar with Parliamentary methods. In the space of a few minutes a comparatively well-filled House became an empty one, an honourable member called the attention of the Speaker to the fact that less than 40 members were present, and Mr. Speaker after the usual interval counted the attendance and finding it less than a quorum declared that "this House stands adjourned." In Parliamentary phrase the House had been counted out.

Medical Officers of Health and Sanitary Inspectors.

Dr. Farquharson has given notice that he will introduce into the House of Commons a "Bill to amend the Law relating to medical officers of health, inspectors of nuisances, and sanitary inspectors, and to provide for superannuation allowances to such officers and inspectors, and for contribution towards such allowances by such officers and inspectors, and make other relative provisions."

HOUSE OF COMMONS.

THURSDAY, APRIL 5TH.

Preservatives in Cream.

Mr. LAMBERT asked the President of the Board of Agriculture whether his attention had been called to recent prosecutions for adding preservatives to cream resulting in conflicting decisions, and whether, seeing that two departmental committees were investigating this question, he could take any steps to prevent any further prosecutions pending the decision of these committees. Mr. WALTER LONG replied: I have seen the reports of the cases to which the hon. member refers, but I have no power to interfere with the exercise of the discretion of the local authorities by which proceedings under the Sale of Food and Drugs Acts are initiated. I do not doubt, however, that those authorities will bear in mind the fact to which the hon. member calls attention, viz., that a departmental committee is now making a full inquiry into the subject of the use of preservatives in food. The matter is not one which falls within the purview of Lord Wenlock's Committee on Milk Standards to which I understand the hon. member also to refer.

Medical Examination of Army Officers.

Mr. WILLIAM REDMOND asked the Under Secretary of State for War whether officers appointed to command brigades of troops at home and in the colonies abroad were, prior to being gazetted, subjected to any medical examination as to their entire physical fitness for field service, and whether their power of horsemanship and general activity were specially reported on by the officer who recommended them for the command of brigades.—Mr. WYNDHAM replied: All colonels are examined as to their physical fitness before being promoted to major-general. After this they are not examined unless there is some reason to doubt their fitness. There is no "officer who recommends for the command of brigades." Selections for these appointments are made by the Army Board under the presidency of the Commander-in-Chief and subject to the approval of the Secretary of State for War, and this Board is fully acquainted with the horsemanship and other qualifications of the officer whom it recommends.

The Education Department and Vaccination.

Mr. ARTHUR O'CONNOR asked the Vice-President of the Committee of Council on Education if he would explain on what grounds the Education Department had insisted, in answer to the Linden-road School Board of Gloucester, on F. Clifford being vaccinated as a condition precedent to his being articled as pupil teacher, although he had already had the small-pox, though by the 30 & 31 Vic., c. 84, s. 31, he could not be ordered by justices to be vaccinated, and under what statute the department enforced the operation as a condition precedent to employment as teacher.—Sir JOHN GORST replied: Clifford seems to have been rejected by mistake. Satisfactory proof that a candidate has already had small-pox would be a sufficient ground for dispensing with vaccination. The Board of Education does not enforce vaccination; but in choosing teachers it requires those to be taken who are protected against small-pox in the interest of the children in the schools.—Mr. ARTHUR O'CONNOR: Am I to understand that the objection to this particular man will be withdrawn?—Sir JOHN GORST: It is already withdrawn.

Medical Officers and the Certification of Lunatics.

Sir MANCHERJEE BHOWNAGGREE asked the President of the Local Government Board, whether he received, as long ago as on Oct. 8th last, from the Bethnal Green Board of Guardians a communication containing evidence taken by a committee of that board tending to show that gratuities had been paid on a large scale to relieving officers by medical officers in respect of the certification of lunatics, as well as by certain metropolitan licensed houses; and whether he had made any inquiries regarding these allegations; and whether, in case of his being satisfied that they were true, he intended taking any steps to prevent a repetition of such practices.—Mr. CHAPLIN replied: The facts are as stated in the question. I have communicated with the Lunacy Commissioners on the subject and I find that they have cautioned the proprietors of metropolitan licensed houses that wherever the practice of giving relieving officers gratuities of the kind referred to has obtained it must be at once discontinued, and the Commissioners have no reason to doubt that their requirement will be respected. They have also communicated their views to the Wiltshire justices, as one of the licensed houses affected was licensed by those justices. As regards the officers of the guardians, I have directed that an inquiry shall be held by an inspector of the Local Government Board. The inquiry will take place as soon as possible, and on receipt of his report I shall have to decide what further steps, if any, it will be necessary for me to take in the matter.—Sir MANCHERJEE BHOWNAGGREE: In view of the facts now disclosed, will the Home Secretary insert adequate provisions in the Lunacy Bill so as effectually to check this practice of paying commissions?—Mr. CHAPLIN: I will consult the Home Secretary on the matter.

The Commission on Sewage Disposal.

Mr. J. W. WILSON asked the President of the Local Government Board whether, having regard to the difficult position of many local authorities who were being pressed to erect or reconstruct sewerage works, he could take steps to hasten the report of the Royal Commission on Sewage Disposal or give the House any idea of the probable date of the said report.—Mr. T. W. RUSSELL, who replied for Mr. CHAPLIN, said: The questions submitted to the Commission involve detailed and prolonged scientific research and I cannot say when their report is likely to be made. With a view to hastening their conclusions they have recently obtained the sanction of the Treasury to an increase of their scientific staff and they are anxious to report at the earliest possible date.

Railways (Prevention of Accidents) Bill.

This Bill, which is mainly designed to get rid of the practice of railway men passing between wagons when engaged in coupling and uncoupling them was read a second time.

MONDAY, APRIL 9TH.

Phthisis in the Post Office Service.

Sir WALTER FOSTER asked the Secretary to the Treasury, as representing the Postmaster-General, whether his attention had been called to the omission from the forty-eighth report of the Post Office of the tables referring to "deaths from phthisis" and "superannuation from phthisis"; whether he could state the reason for the omission of this information; and whether he would direct that they be inserted in the next report.—Mr. ANSTRUTHER, on behalf of Mr. Hanbury, replied: Tables referring to deaths and superannuation from phthisis among the Post Office staff were omitted from the last report in order to increase the space available for particulars of more general interest and because there seemed to be no sufficient reason for bringing phthisis into special prominence. The numbers of deaths and superannuations during the year from this disease as well as from others were given in Appendix F to the report, and the Postmaster-General is disposed to think that the information there is sufficient.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

ATKES, WILLIAM, M.D., B.Ch. Dub., has been appointed Medical Officer for the Second Kingswinford Sanitary District, Stourbridge Union, vice A. Conway, resigned.

BEATSON, G. T., M.D. Edin., C.M., L.R.C.S., has been appointed Visiting Surgeon, Western Infirmary, Glasgow.

BIENEMANN, A. J., M.B., C.M. Edin., has been appointed Medical Officer for the Farnham Royal District, Eton Union, vice S. Dibbs, resigned.

BISDEE, A. J., M.R.C.S., has been re-appointed District Medical Officer of the Ware Union.

BLAMEY, J., M.R.C.S., has been re-appointed Medical Officer for the Penrhyn Sanitary District.

BOWLES, BEATRICE, M.B., C.M. Lond., has been appointed Assistant Medical Officer for the Workhouse, Parish of St. Matthew, Bethnal Green, London.

BROWN, W., M.D., C.M. Glasg., has been appointed District Medical Officer by the Bristol Board of Guardians.

BUCHANAN, G., M.D. St. And., L.R.C.S. Edin., F.F.P.S. Glasg., has been appointed Honorary Consulting Surgeon, Western Infirmary, Glasgow.

CHICKEN, R. C., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed a Medical Referee under the Workmen's Compensation Act, 1897, and to act for the Worksop and Mansfield Districts of the County-court Circuit No. 18.

COCKCROFT, H. M., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Masham Sanitary District, Leyburn Union, vice R. E. T. Ewart, resigned.

COOK, H., M.B., C.M. Aberd., has been appointed District Medical Officer by the Bristol Board of Guardians.

ENSOR, HENRY COLLEN, M.R.C.S., L.S.A. Lond., has been re-appointed Ophthalmic Surgeon to the Ely Schools by the Cardill Board of Guardians.

FALCONER, H. B., L.S.A. Lond., has been appointed District Medical Officer by the Bristol Board of Guardians.

FLOOD, P., L.R.C.P. & S. Irel., has been appointed District Medical Officer by the Bristol Board of Guardians.

FLOWER, FREDERICK I., M.R.C.S., L.S.A. Lond., has been re-appointed Medical Officer of Health for Warminster.

FORREST, J. S., L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Sanitary District of Warkworth, Alnwick Union, vice W. Smyth, resigned.

FOSTER, M. B., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Medical Officer for the First Sanitary District, Ware Union, vice H. F. Eland, resigned.

GENT, W. C., L.R.C.P. & S. Edin., has been appointed District Medical Officer by the Bristol Board of Guardians.

GRANT, J. W., M.B., C.M. Edin., has been appointed Medical Officer for the Woburn Sanitary District, Woburn Union.

HAWKINS, W. R. T., M.R.C.S., L.R.C.P. Edin., has been appointed District Medical Officer by the Bristol Board of Guardians.

HAY, GEORGE G., M.B., Ch.B. Edin., has been appointed House Surgeon and Dispenser to the Northern Infirmary, Inverness.

HINDE, F. R. B., M.D. Edin., M.R.C.S., has been re-appointed District Medical Officer of the Ware Union.

JONES, J., L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Dolgelly Sanitary District of the Dolgelly Union, vice E. Jones, deceased.

MARTIN, J. M., M.B., B.C. Cantab., D.P.H., has been appointed Medical Officer for the Rural Sanitary District by the Stroud Rural District Council, vice T. Partridge, resigned.

MASON, G. B., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Sixth Sanitary District, Lutterworth Union, vice R. N. Barron, resigned.

MCKENZIE, W., M.A., M.B., C.M. Aberd., has been appointed District Medical Officer by the Bristol Board of Guardians.

MOORE, B., late Assistant Professor of Physiology, University College, London, has been appointed Lecturer on Physiology at the Charing-cross Hospital Medical School, London.

MORGAN, A. T., M.D. Brux., L.S.A. Lond., has been appointed District Medical Officer by the Bristol Board of Guardians.

MUIR, J. C., M.B., B.C. Camb., L.R.C.P. Lond., M.R.C.S., has been appointed Senior Assistant Medical Officer for the Crumpsall Workhouse, Township of Manchester, vice H. J. Crossley, resigned.

PAGE, G. S., L.R.C.P. & S. Edin., has been appointed District Medical Officer by the Bristol Board of Guardians.

PATTON, J., M.B., C.M. Edin., has been appointed Medical Officer for the Stamford Bridge Sanitary District of the Pocklington Union, vice F. Wright, resigned.

SEDDON, A., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Frome Sanitary District of the Frome Union, vice F. E. Pearse, deceased.

SHEPPARD, E. J., L.R.C.P. & S. Edin., has been appointed District Medical Officer by the Bristol Board of Guardians.

SISSONS, A. T., M.B., B.Ch. Vict., has been appointed Second Resident Assistant Medical Officer for the Crumpsall Workhouse, Township of Manchester, vice J. C. Muir.

SMITH, F. J., M.D. Oxon., F.R.C.S. Eng., has been appointed Physician to the National Orthopædic Hospital, Great Portland-street, London.

STAPLE, J. DIBBLE, M.R.C.S., L.S.A., has been appointed District Medical Officer by the Bristol Board of Guardians.

WARNER, E. H., M.D., C.M. Edin., has been appointed District Medical Officer by the Bristol Board of Guardians.

WIGG, J., L.R.C.P. Lond., has been appointed Medical Officer for the Second District, Parish of St. Pancras, London.

WILLIAMS, PENROSE LANYON WATKIN, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health for the Cannington District by the Bridgwater Board of Guardians, vice J. L. Ker Pringle, resigned.

WOOD, M. A., F.R.C.S. Eng., L.R.C.P. Lond., has been re-appointed Medical Officer by the Ledbury Urban District Council.

YOUNG, J., M.D., C.M. Glasg., has been appointed District Medical Officer by the Bristol Board of Guardians.

YOUNG, MEREDITH, M.D., M.S., D.P.H., has been appointed Medical Officer of Health for the County Borough of Stockport, vice Charles Porter.

Vacancies.

For further Information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £75, with board, residence, and laundry. Apply to the Hon. Secretary, 20, Chapel-street, Liverpool.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Birmingham.—House Surgeon, tenable to Oct. 31st next. Salary at the rate of £60 per annum, with board, lodging, and washing.

BOLTON INFIRMARY AND DISPENSARY.—Junior House Surgeon for months. Salary £80 per annum, with apartments, board, and attendance.

CARDIFF INFIRMARY.—Assistant House Physician for six months. Salary at the rate of £50 per annum, with board, washing, and apartments.

CITY DISPENSARY, 29 and 30, College-street, Dowgate-hill, London.—Visiting Medical Officer. Honorarium 50 guineas a year.

CITY OF LIVERPOOL INFECTIOUS DISEASES HOSPITALS.—Assistant Resident Medical Officer to the above hospitals, unmarried. Salary £80 per annum (subject to a contribution of £3 per cent. per annum to the Corporation Superannuation Fund), together with board, washing, and lodging at the hospital. Applications to the Town Clerk, Town Clerk's Office, Liverpool.

CORPORATION OF MANCHESTER.—Junior Assistant to the Medical Officer of Health. Salary £200 per annum. Applications to the Town Clerk, Public Health Office, Town-hall, Manchester.

COUNTY ASYLUM, Shrewsbury.—Junior Assistant Medical Officer. Salary to commence at £130 per annum, rising £10 a year to £150, with board, lodging, and washing. No liquors provided.

COUNTY BOROUGH OF WEST HAM LUNATIC ASYLUM.—Superintendent. Asylum now in course of erection at Chadwell Heath, Essex. Salary £600 per annum, with unfurnished house, light, washing, and garden produce. Apply to the Town Clerk, Town-hall, West Ham, E.

CUMBERLAND AND WESTMORLAND ASYLUM, Garlands, Carlisle.—Junior Assistant Medical Officer, unmarried. Salary £100 a year, with board and residence.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY, Dumfries.—House Surgeon. Salary £50 per annum, with board and washing. Also Assistant House Surgeon. Board and washing provided.

GENERAL INFIRMARY at Leeds.—Resident Medical Officer. Salary £100 per annum, with board, residence, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon. Salary £90 per annum, with board, lodging, and washing.

HALIFAX UNION WORKHOUSE, ST. LUKE'S HOSPITAL.—Assistant Medical Officer for this hospital and workhouse, unmarried. Salary £160 per annum, mid-day meal provided, subject to superannuation deduction. Apply to the Clerk to the Guardians, Union Office, Halifax.

HOSPITAL AND DISPENSARY, NEWARK-UPON-TRENT.—House Surgeon, unmarried. Salary £80 per annum, with board and lodging in the Hospital.

HOSPITAL FOR WOMEN AND CHILDREN at Leeds.—Non-resident House Surgeon for six months. Salary at the rate of £125 per annum.

KIDDERMINSTER INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon, unmarried. Salary £140, increasing annually by £10 to £170, with rooms in the Infirmary and attendance. Option of board at £40 per annum.

KING'S COLLEGE, London.—Obstetric Registrar and Tutor at King's College Hospital. Also Professorship of Materia Medica and Pharmacology.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £85 per annum.

LEICESTER INFIRMARY.—Assistant House Surgeon for 12 months. Salary £80 per annum, with board, apartments, and washing.

LINCOLN UNION.—Medical Officer for the Workhouse at Lincoln. Salary £70 per annum, with certain perquisites. Applications to the Clerk, Lincoln.

LONDON THROAT HOSPITAL, 204, Great Portland-street.—Surgeon and Assistant Surgeon.

MILLER HOSPITAL AND ROYAL KENT DISPENSARY, Greenwich-road.—Junior Resident Medical Officer for six months. Salary at the rate of £40 per annum, with board, attendance, and washing.

MORPETH DISPENSARY.—House Surgeon, unmarried. Salary £106 per annum, with furnished rooms, coals, gas, and attendance.

NORTHAMPTON GENERAL INFIRMARY.—Assistant to the House Surgeon for six months. Board, lodging, and washing provided, and an honorarium of £25 given for that term.

NORTH RIDING COUNTY ASYLUM, Clifton, York.—Senior Assistant Medical Officer, unmarried. Salary £150, rising to £200, with board, apartments, washing, and attendance.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London.—House Surgeon for six months. Salary at the rate of 50 guineas a year, with board and residence.

PARISH COUNCIL OF UIG, Island of Lewis.—Medical Officer and Public Vaccinator. Salary £200, exclusive of certain fees. Applications to the Chairman of the Parish Council.

PARISH OF BIRMINGHAM WORKHOUSE INFIRMARY.—Assistant Resident Medical Officer at the Workhouse Infirmary, for one year only. Salary £100 per annum, with furnished apartments, rations (no alcoholic liquors), coal, gas, laundry, and attendance. Apply to the Clerk to the Guardians, Parish Offices, Edmund-street.

PARISH OF LIVERPOOL.—**Assistant Medical Officer** for the Workhouse, Brownlow Hill, unmarried. Salary (subject to superannuation deductions, £80 per annum, with rations, an additional sum of £20 being allowed for examining applicants for out-door relief. Apply to the Vestry Clerk, Parish Offices, Brownlow Hill, Liverpool.

PARISH OF ST. LEONARD, Shoreditch, London.—Second Assistant Medical Officer for the Infirmary, Hoxton-street, N., for six months. Salary £80 per annum, with rations, washing, and furnished apartment in the infirmary. Applications to the Clerk to the Guardians, Office, 213, Kingsland-road, N.E.

PRESTON ROYAL INFIRMARY.—**Assistant House Surgeon.** Salary £60 per annum, with board, lodging, and washing, &c.

QUEEN'S HOSPITAL, Birmingham.—**Assistant Ophthalmic Surgeon.** Honorarium £50 per annum.

ROYAL HALIFAX INFIRMARY.—**Third House Surgeon,** unmarried. Salary £50 per annum, with residence, board, and washing.

ROYAL HOSPITAL FOR CHILDREN AND WOMEN, Waterloo-bridge-road, London.—Two **Assistant Physicians.**

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London.—**House Physician** for six months. Salary at the rate of £40 per annum, with furnished apartments, board, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL), City-road, E.C.—Three **Assistant Surgeons.**

SALOP INFIRMARY, Shrewsbury.—**Assistant House Surgeon** for six months. Salary at the rate of £40 per annum, with board and washing.

SCARBOROUGH HOSPITAL AND DISPENSARY.—**Senior House Surgeon** for twelve months. Salary £80, with residence, board, and washing.

STAMFORD HILL AND STOKE NEWINGTON DISPENSARY, Stoke Newington.—**Assistant Resident Medical Officer.** Salary £100 per annum, with board and residence.

STOCKPORT INFIRMARY.—**Assistant House and Visiting Surgeon.** Salary £70 per annum, with board, washing, and residence.

SUNDERLAND INFIRMARY.—**House Surgeon.** Salary £80, rising £10 annually to £100, with board and residence.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—**Assistant House Surgeon** for six months. Salary at the rate of £30 per annum, with board, lodging, and laundry.

TEIGNMOUTH HOSPITAL, South Devon.—**House Surgeon.** Salary £50 per annum, with board, lodging, and washing. £6 per annum allowed in lieu of stimulants.

THE CHIEF INSPECTOR OF FACTORIES gives notice of vacancies as Certifying Surgeons under the Factory Acts at Shah in the County of Westmorland, at Pollokshaws in the County of Renfrew, at Ballynahinch in the County of Down, at Roos in the County of York, and at New Southgate in the County of Middlesex.

THE SECRETARY OF STATE FOR THE HOME DEPARTMENT gives notice of the following vacancy:—**Medical Referee** under the Workmen's Compensation Act, 1897, for Taunton Division, including Taunton, Bridgwater, Chard, Langport, Wellington, and Williton Districts of County-court Circuit No. 57.

UNIVERSITY COLLEGE, London.—**Professorship of Medical Jurisprudence.** Also **Surgical Registrar.** Also **Resident Medical Officer.**

WESTON-SUPER-MARE HOSPITAL.—**House Surgeon,** unmarried. Salary £100 per annum, with board and residence in the hospital.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—**House Physician** for two years. Salary £100 a year, with board, lodging, and washing.

WREXHAM INFIRMARY.—**House Surgeon.** Salary £80 and washing.

Births, Marriages, and Deaths.

BIRTHS.

BOWER.—On March 31st, the wife of Harry E. Bower, M.B. Edin., of Viewfield, Stretton, near Warrington, of a daughter.

HOW.—On April 4th, at Parkhurst, Claygate, the wife of Arthur B. How, M.R.C.S., of a son.

MASON.—On April 6th, at 45, George-street, Portman-square, the wife of G. A. Mason, M.A., M.B., B.C. Cantab., of a daughter.

DEATHS.

BOYLE-TRAVERS.—On April 6th, at Farsid, Rostellan, co. Cork, Robert Boyle-Travers, F.R.C.S., aged 77 years.

JACKMAN.—On April 6th, Arthur Croome, third son of Thomas S. H. Jackman, L.R.C.P., of 11, Stoke Newington-road, N.

MACLAGAN.—On April 5th, at Heriot-row, Edinburgh, Andrew Douglas Maclagan, M.D., LL.D., Knight Bachelor, recently Professor of Medical Jurisprudence and Public Health in the University of Edinburgh.

NOURSE.—On April 8th, at the Naval Hospital, Chatham, Surgeon Arthur William Nourse, Royal Navy, eldest son of Colonel Nourse, aged 26 years.

OLDHAM.—On April 4th, at Hazelmere, Thornton-avenue, Streatham-hill, S.W., the residence of his mother, after a long illness, George St. John Oldham, L.R.C.S., L.R.C.P., late of Clapham, eldest son of the late George St. John Oldham, M.D., of Castleknock, co. Dublin.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DOCTOR'S DREAM.

THE following are the verses which we recently quoted from. They appeared in *Punch* many years ago, but we are unable to tell our correspondents—several of whom have asked us—the name of their author:—

I.

I am sitting alone by the surgery fire, with my pipe alight now the day is done;
The village is quiet, the wife's asleep, the child is hushed, and the clock strikes One!
And I think to myself as I read the news, and bless my life for the peace upstairs,
That the burden's sore for the best of men, but few can dream what the Doctor bears;
For here I sit at the close of day, while others have counted their profit and gain,
And I've tried as much as a man can do, in my humble manner to soften pain:
I've warned them all, in a learned way, of careful diet, and talked of "tone,"
And when I have preached of regular meals I've scarcely had time to swallow my own.
I was waked last night in my first long sleep, when I crawled to bed from my rounds dead beat—
"Ah! the Doctor's called," and they turned and snored as my trap went rattling down the street.

II.

I sowed my oats, pretty wild they were, in the regular manner when life was free,
For a Medical Student isn't a saint any more than your orthodox Pharisee;
I suppose I did what others have done since the whirligig round of folly began,
And the ignorant pleasures I loved as a boy I have pretty well cursed since I came to be man.
But still I recall through the mist of years, and through the portals of memory steals,
The kindly voice of a dear old man who talked to us lads of the man who heals;
Of the splendid mission in life for those who study the Science that comes from God,
Who buckle the armour of Nature on, who bare their breasts and who kiss the rod.
So the boy disappeared in the faith of the man, and the oats were sowed; but I never forgot
There were few better things in the world to do than to lose all self in the Doctor's lot.

III.

So I left the life that had seemed so dear to earn a crust that isn't so cheap;
And I bought a share of a practice here, to win my way—and to lose my sleep;
To be day and night at the beck and call of men who ail and of women who lie;
To know how often the rascals live, and see with sorrow the dear ones die;
To be laughed to scorn as a man who fails when Nature pays her terrible debt;
To give a mother her first-born's smile and leave the eyes of the husband wet;
To face and brave the gossip and stuff that travels about through a country town;
To be thrown in the way of hysterical girls and live all the terrible scandals down;
To study at night in the papers here of new disease and human ills;
To work like a slave for a weary year and then be cursed when I send my bills.

IV.

Upon my honour we're not too hard upon those who cannot afford to pay,
For nothing I've cured the widow and child; for nothing I've watched till the night turned day.
I've earned the prayers of the poor, thank God, and I've borne the sneers of the pampered beast;
I've heard confessions and kept them safe as a sacred trust like a righteous priest.
To do my duty I never have sworn as others must do in this world of woe,
But I've driven away to the bed of pain through days of rain and through nights of snow.

As here I sit and smoke my pipe, when the day is done and the wife's asleep,
And think of that brother-in-arms who's gone, and utter—well, something loud and deep!
And I read the news and I fling it down, and I fancy I hear in the night that scream
Of a woman who's crying for vengeance; Hark! no, the house is still—it's a Doctor's dream.

PARISH NURSING.

To the Editors of THE LANCET.

SIRS,—May I call attention to the system of parochial nursing which appears to me to be developing at the present day? During the 12 years I have acted as a general practitioner in the south-east of London I have necessarily been brought in contact with many of the humble class. A nurse happens to have resided in the district for a greater or less period appointed by a Church association. It apparently happens, however, that her semi-official position inspires the less-educated classes with a confidence in the discharge of duties for which she has undergone no training beyond that of a nurse, and in consequence of this she is called into houses to render advice, and this she renders in cases which she regards as simple, treating them on her own responsibility. In consequence of this I wrote to the vicar of the parish, pointing out to him that the General Medical Council had recently issued an edict prohibiting what is known as "covering" unqualified practice, and that I declined to coöperate further with any parish nursing on the ground that I might be held responsible, believing, as I do, that this practice is against the spirit of the law. As the association in question is evidently philanthropic I should be pleased to know whether my refusal to be involved could be regarded as harsh treatment towards the poor.

I am, Sirs, yours faithfully,

April 7th, 1900. G. P.

MANCHURIAN PARTRIDGES.

To the Editors of THE LANCET.

SIRS,—What may prove to be a useful addition to the dietary of the invalid has recently been made by the importation of Manchurian partridges, and moreover it is one that will be constantly available, the birds being killed when in prime condition and kept frozen. They are a little smaller than the English variety and may be distinguished by this and by the absence of the russet feathers which form such a marked feature on the breast of our male bird. In place of these russet feathers there are a quantity of yellowish-fawn coloured feathers upon the underside of the neck which terminate upon the breast in a black horse-shoe. It appears that these birds, though of the Manchurian variety, are really imported from the neighbourhood of Western Siberia, where they are found in immense numbers upon the mountains. In this cold region they become frozen directly after they are killed. Conveyed in sleighs to Omsk they are sent on by rail to Libau, a port in the Baltic, from which place they are shipped to London. The birds as a whole seem to be in capital condition and are remarkably tender and delicate eating. I do not remember to have seen any definite pronouncement of opinion with regard to the relative nutrient value and digestibility of fresh and frozen meat. Perhaps some of the many readers of THE LANCET can enlighten my ignorance on this point. It is a point nowadays of no little importance, and if the question can be answered in a sense favourable to the claims of frozen flesh these partridges may prove a useful addition to the invalid's dietary, especially as the price at which they are sold—viz., 2*s.* and 2*s.* 3*d.* per brace—will bring them within the reach of persons of comparatively slender means.

I am, Sirs, yours faithfully,

April 9th, 1900. PERDIX.

A NEW FORM OF INFECTION.

THE *Phonographic Record* is responsible for the following story which is commended to the consideration of Professor Schenck and his enthusiastic followers:—"A clergyman walking on the outskirts of his parish one day found one of his parishoners whitewashing his cottage. Pleased at this novel manifestation of the virtue that is next to godliness he complimented the man on his desire for neatness. With a mysterious air the worker descended from the ladder and approaching the fence said, 'That's not exactly the reason why I'm a doin' of this ere job, your worship. The last two couples as lived here had twins, so I ses to my missus, "I'll take and whitewash the place so's there mayn't be no infection." You see, sir, as how we've got ten of 'em already.'"

"A FACT FOR DARWIN."

"ON no link in the ascending chain of animal evolution can you lay your finger and say, 'Here intelligence begins.'" Darwin, indeed, goes further, and in the higher mammalia at least would recognise not only intelligence but the germs of a moral sense. The following anecdote, communicated from a Marseilles correspondent to the *Stampa* of Turin, reinforces the well-known argument which closes the "Descent of Man." One Vincenzo Princesvalle, recently arrived from the Transvaal at the French port, started a restaurant in the Rue Michelet, where he settled down with his wife, four children, and a singularly intelligent ape which bore the name of "Fanny." In one of the cold nights lately prevalent the whole family had lain down to sleep in the largest room, and their aggregation not sufficing to make them warm enough, Vincenzo lit a brazier containing a certain quantity of charcoal. In an hour or two the atmosphere became so oppressive that "Fanny," who slept at the foot of Vincenzo's bed, got up and, suspecting that all was not right, tried to rouse her master, but in vain. His sleep, like that of his wife and their four children, had become stertorous and comatose. "Fanny" thereupon gave vent to piteous cries which brought in the waiter from the adjoining room. The instant he opened the door she darted out, and while he was doing his best for the semi-asphyxiated family she made for the house of one Marquet 30 yards off, with the inmate of which she was a special favourite. Her cries drew the man to the window and these she followed up with gestures so significant that he soon convinced himself that something was wrong. Continuing her eloquent "grimaces" (or "smorfie," as the Italian reporter phrases it) "Fanny" got him to accompany her to the restaurant, where he lost no time in reinforcing the waiter's "first aid" with professional assistance. Not without difficulty the family were rescued from a fate unintelligently invited by a man and most intelligently—nay, philanthropically—averted by a monkey!

CONGENITAL ABSENCE OF THE EARS.

To the Editors of THE LANCET.

SIRS,—During my residence at Mandvi, while I was going to the seashore a few days back I was shown a Mahomedan boy, about six years old, with congenital absence of ears, playing with other boys and enjoying the play as freely as his companions did. He looked quite healthy and intelligent and all other parts of the body were normally developed. He had no difficulty in hearing from a distance from which others could hear us speaking. When questioned he answered promptly with distinct articulation of voice. On examining him I saw no trace of external auricle or of external auditory meatus except a small, thin vertical fold of skin (one inch in length) just in front of the mastoid process, representing perhaps the auricle (its helix?). On the rest of the temporal bone the skin on feeling seemed of the same colour and thickness as on the surrounding part of the skull. On pressing against the temporal bone in front of the mastoid process on both sides I could feel a slight depression, but it did not feel so deep as to suggest the patency of the external auditory canal and meatus behind the skin covering the bone. No other abnormality was found either in the mouth or in the adjacent parts. I wonder how the power of hearing was preserved notwithstanding the entire absence of the external auditory openings.—I am, Sirs, yours faithfully,

KESHAVLAL J. DHOLAKIA.

Mandvi, Kutch, Western India, March 14th, 1900.

"THE ROYAL NAVY MEDICAL DEPARTMENT."

To the Editors of THE LANCET.

SIRS,—Sir Dyce Duckworth, in his attempt in THE LANCET of March 31st, p. 982, to defend the Admiralty in making a distinction in their lists of medical officers holding certain diplomas makes matters worse. He contends that since 1892 the examination for the M.B. of certain universities is "sufficient." What about the M.B. degree previously to 1892? My argument is that the examinations of the Conjoint Examining Boards of England, Ireland, and Scotland are more practical and searching than the majority of the universities. To prove my assertion I refer your readers to the minutes of the General Medical Council for the past year, the "entries," "passes," and "rejections" can be there compared. The General Medical Council have done their utmost to quash the Preliminary Examination of the College of Preceptors by casting aspersions on the examinations, whereas it is a well-known fact that the candidates who fail at these examinations have no difficulty in finding "an open door" at certain universities and "getting through" an examination entitling them to become registered medical students. If the universities want to swagger about their degrees the standard of the Arts course must be raised; as it now stands it is a farce. The General Medical Council compel the College of Preceptors and others to adopt a certain course—that is, to pass all the subjects at one examination. This is not so in the universities; the registration of medical students in some of the universities is done without even the production of any Arts certificate at all. As long as the Arts and Medical courses in universities are allowed to run concurrently the university medical graduate has nothing to boast of.

I am, Sirs, yours faithfully,

April 7th, 1900. JUSTICE.

X. Y. Z.—Our correspondent does not mention the strength of the solution of eucaine β which he employed. A 2 per cent. solution is the most convenient for ophthalmological work, two drops being applied every three minutes until 10 drops have been used. This will give efficient local anæsthesia. One great excellence in this drug is to be found in the fact that it is not destroyed by boiling, and so its solutions are readily sterilised.

Disgusted.—We cannot express any opinion in the matter. These things are clearly for private arrangement between employer and employed, and we know that many employed hold a different view to that of our correspondent.

ERRATUM.—The poem entitled "The Autocratic Doctor," quoted in THE LANCET of April 7th (p. 1042), was extracted from the March number of the *Practitioner*, and not from the source which was by an inadvertence mentioned in our issue of the above date.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 11th, 1900.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
April 5	29·54	N.E.	0·05	62	49	43	44	47	Cloudy
" 6	29·89	N.W.	0·09	90	55	37	40	42	Fine
" 7	29·69	S.E.	0·05	74	51	41	43	45	Overcast
" 8	29·85	N.E.	...	63	49	39	42	45	Cloudy
" 9	29·73	S.E.	...	82	56	39	41	43	Hazy
" 10	29·75	N.W.	0·02	98	58	42	44	46	Fine
" 11	29·63	S.W.	0·09	101	60	46	51	53	Overcast

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (16th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat 2 P.M. and 6 P.M.), Royal Ear (3 P.M.).

WEDNESDAY (18th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.)

THURSDAY (19th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.) University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.).

FRIDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.).

SATURDAY (21st).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (18th).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Mr. W. Carruthers (President): Demonstration on the Structure of some Palæozoic Plants (with sections of the plants thrown on the screen).

NORTHERN AND MIDLAND DIVISION OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION (County Asylum, Whittingham, near Preston, Lancashire).—Business Meeting. 4 P.M. Discussion on the new Lunacy Bill (Dr. Mould). Papers by Mr. F. O. Simpson and Catherine M. Blackwood, L.R.C.P. Edin.

THURSDAY (19th).—HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road).—8.30 P.M. Clinical Evening.

FRIDAY (20th).—EPIDEMIOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—7.45 P.M. Council Meeting. 8.30 P.M. Ordinary Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TUESDAY (17th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. W. Ewart.: Consultation. (Medical.)

WEDNESDAY (18th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Smith: Consultation. (Surgical.)

THURSDAY (19th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Hutchinson: Consultation. (Surgical.)

FRIDAY (20th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. StClair Thomson: Consultation. (Nose and Throat.)

During the week marked copies of the following newspapers have been received: *Scarborough Post, Morning Herald, Sheffield Daily Telegraph, Scotsman, Liverpool Daily Post, Morning Leader, Dundee Advertiser, Bath Daily Chronicle, Norfolk Daily Standard, Kent Messenger, Tunbridge Wells Advertiser, Leicester Daily Post, East Daily Press (Norwich), Lancaster Standard, Leeds Mercury, Huddersfield Examiner, News of the West (London), Times of India, Pioneer Mail, Weekly Dispatch, Bristol Mercury, Builder, Citizen, Architect, Yorkshire Post, Yarmouth Independent, Stalybridge Herald, Brighton Gazette, Sanitary Record, Local Government Chronicle, Reading Mercury, Crewe Chronicle, The Malthusian, Hertfordshire Mercury, City Press, Mining Journal, Chelsea Mail, Bradford Observer, Birmingham Daily Post, Literary Digest, Loughborough Examiner, Manchester Courier, Llangollen Advertiser, Local Government Journal, Surrey Advertiser, Surrey Times, Oban Times, Aldershot News, Lincolnshire Chronicle, Rushden Echo, Herts Advertiser, Lincoln Mercury, Isle of Wight County Press, &c., &c.*

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE, OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Messrs. Armour and Co., Lond.; Messrs. Arnold and Sons, Lond.; A. P.; Dr. A. Armer, Liverpool; Messrs. Allen and Hanburys, Lond.; Mr. W. Armstrong, Buxton; A. H. S.; Messrs. P. R. Arrowsmith and Co., Liverpool; Anglo-American Exchange, Lond., Manager of.

B.—Mr. F. W. Bowater, Lond.; Mr. W. G. Benge, Sampford Peverell; Messrs. Bedford and Co., Lond.; Messrs. Boulton and Paul, Norwich; Dr. D. H. Baria, Dhrangadhra, India; Mr. L'Heure Blenkarne, Worthing; Dr. S. S. Burt, New York City; Dr. A. B. Blair, Bagwell; Mr. C. Birchall, Lond.; Mr. E. J. Blackett, Lond.; Bolton Infirmary and Dispensary, Secretary of; Mr. J. Barker, Lond.; *Birmingham Daily Gazette*, Proprietors of; Dr. Byrom Bramwell, Edinburgh; Mr. Braine-Hartnell, Stroud; Mr. W. H. Brown, Lee's.

C.—Mr. F. G. H. Cooke, Lond.; Messrs. J. and A. Churchill, Lond.; City of London Lying-in Hospital, Secretary of; Dr. B. G. Corney, Sura, Fiji; Condal Water, Secretary of; Cortland Wagon Co., Lond.; Dr. Chavasse, Birmingham; Cantab, Lond.; Messrs. Callard and Co., Lond.; Messrs. Carnrick and Co., Lond.; Cardiff Infirmary, Secretary of; Miss Canning, Hove; Corporation of Manchester, Town Clerk of; Cumberland and Westmorland Asylum, Carlisle, Secretary of; Mr. P. R. Cresswell, Dowlais; Dr. N. Cullinan, Pontyminster.

D.—Dr. C. V. Ding'e, Middlesborough; Mr. K. J. Dholakia, Mandvi; Mr. A. Duke, Cheltenham; *Deutsche Medicinische Wochenschrift*, Berlin; Mr. T. Dixon, Lond.; Messrs. Wm. Dawson and Sons, Lond.; Disgusted.

E.—Dr. F. W. Edridge-Green, Hendon; Dr. W. Edmunds, Lond.; Dr. Eicholz, Creuznach.

G.—Dr. J. Gledhill, Poole; Mr. R. Graham, Pitlair; Glasgow University, Assistant Clerk of; Gresham College, Lond.; Dr. H. B. Gladstone, Lond.; General Hospital, Wolverhampton, Secretary of; *Guy's Hospital Gazette*, Editor of.

H.—Mr. E. G. Hawkings, Plymouth; Mr. E. Hopkins, L'andilo; Halifax Union Workhouses, Town Clerk of; Dr. Hunt, Oxford.

I.—Institut d'Anatomie Topographique Bucarest, Director of.

J.—Dr. W. W. Jones, Bath.

L.—Mr. P. G. Lodge, Bradford; London Throat Hospital, Hon. Secretary of; Messrs. Larcom and Veysey, Portsmouth; Leeds Public Dispensary, Secretary of; London Press Exchange; Messrs. Lee and Nightingale, Liverpool; Leeds General Infirmary, Secretary of; Dr. Glover Lyon, Lond.

M.—Mr. W. Martindale, Lond.; Messrs. C. Mitchell and Co., Lond.; Lieutenant-Colonel C. B. Maitland, I.M.S. Poonah; Mrs. J. H. Mallam, Lond.; Messrs. Matthews Bros., Lond.; Mr. F. Macara, Glasgow; Messrs. Macnaughtan Bros., Glasgow; H. Markley, Chester; Dr. T. K. Munro, Glasgow; Medical Graduates' College, Lond., Mr. W. Marriott, Lond.

N.—Mr. Noy-Scott, Plympton St. Mary; New River Co, Lond., Clerk of; Mr. H. Needes, Lond.; Mr. G. T. W. Newsholme, Sheffield.

O.—Ocean Accident Corporation; Dr. O'Neill, Lincoln.

P.—Mr. R. Page, Lond.; Mr. G. Pernet, Lond.; Mr. Y. J. Pentland, Edinburgh; Mr. Foster Palmer, Lond.; Dr. S. Partridge, Darlaston.

R.—Mr. E. J. Reid, Lond.; Dr. J. D. Rice, Lond.; Messrs. Reitmeyer and Co., Lond.; Messrs. Reynolds and Branson, Leeds; Registered Nurses' Society, Lond., Secretary of; Mr. W. I. Richardson, Lond.; Royal Halifax Infirmary, Secretary of.

S.—Mr. Noble Smith, Lond.; Dr. W. J. Simpson, Lond.; Saarbach's News Exchange, Mainz; Messrs. G. Street and Co., Lond.; Messrs. W. Sugg and Co., Lond.; *South Africa*, Lond., Manager of; Dr. J. F. J. Sykes, Lond.; Mr. C. H. Sers, Lond.; Dr. W. Seymour, Troy, U.S.A.; Messrs. Smith, Elder and Co., Lond.; Mr. H. W. Scriven, Lond.; Scarborough Hospital, Hon. Secretary of; Dr. Stott, Lond.; Messrs. Spiers and Pond, Lond.; Messrs. Squire and Sons, Lond.; Mr. F. B. Smith, Port Talbot; Messrs. W. H. Smith and Son, Liverpool; Shrewsbury County Asylum, Secretary of; Messrs. W. H. Smith and Son, Manchester; Mr. S. Stretton, Kidderminster.

U.—University College, Bristol.

V.—Mr. J. W. Vickers, Lond.

W.—Mr. W. B. Winston, Lond.; Mr. Simeon Walker, Bombay; Wrexham Infirmary, Secretary of; Wolverhampton and Staffs General Hospital, Secretary of; Messrs. J. Wright and Co., Bristol.

Y.—Dr. M. Young, Crewe.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. F. C. Angear, Chatham; Mr. E. L. Archer, Worthing; A. G.; Messrs. Arbuthnot and Co., Madras; A. W.; A. E. G.; A. C.; A. L.

B.—Mr. W. H. Best, Ilford; T. B. Browne, Ltd., Lond.; Mr. H. Butterfield, Northampton; Messrs. J. Beal and Son, Brighton; Mr. W. L. Byham, Sunbury Common; Mr. G. F. Burd, Dobcross.

C.—Dr. C. Cochrane, Sheffield; Messrs. W. P. and W. Cox, Leicester; C. B. M.

D.—Dr. A. S. Dick, Guernsey; Dumfries Royal Infirmary, Secretary of; Dowlais Iron Co., South Wales; Mr. D. N. Day, Kakina, India; Messrs. Doug'as and Foulis, Edinburgh.

E.—Dr. S. J. Elkin, Emerson, Manitoba; E. O. S.; Messrs. Evans and Wormull, Lond.; Dr. W. Ewart, Lond.; Dr. R. Edwards, Colwyn Bay.

F.—Mr. F. A. C. Fletcher, Crosshills; Mr. J. K. Frost, Kingstone; F. H., Lond.; F. W. G.; Messrs. Fletcher, Fletcher, and Co., Lond.; Messrs. Ferris and Co., Bristol.

G.—Surgeon C. B. Gittings, R.N., H.M.S. *Mars*, Channel Squadron; Mr. O. W. Gange, Tuxford; Messrs. Giles, Schacht and Co., Clifton; G. H. N.; Dr. F. Gahne, Belize.

H.—Mr. H. Hutton, Leamington; Mr. A. V. C. Holt, Biddulph; Mr. R. F. Hiley, Newark; H. E. H.; H. A., Leeds; Dr. F. Hewitt, Lond.

J.—Mr. R. Jagger, Oldham; J. L.; J. W. H.; J. C.; J. F. H.; Dr. R. W. Jones, Penrhiwceiber; J. P. W.; J. T. B.; Mr. E. O. Jones, Amlwch.

K.—Mr. J. H. Kisby, Warrington; Lieutenant-Colonel H. W. Kiallmark, Lond.

L.—Mrs. Lappin, Gilford, Ireland; Mr. C. B. Lockwood, Lond.; Mr. F. Luther, Hove; L. M. N., Manchester.

M.—Mr. W. A. Mushé, Lond.; Messrs. Mellersh, Godalming; Mr. F. W. Marsden, Burnley; Morpeth Dispensary, Secretary of; Medicus, Manchester.

N.—Messrs. H. Nickel and Co., Cassel; Mrs. N.; N. A. B.

O.—Messrs. Oliver and Boyd, Edinburgh.

P.—Messrs. C. Pool and Co., Lond.; Plasmon Syndicate, Lond.; Preston Royal Infirmary, Secretary of; Dr. W. H. Price, Wrexham Bridge.

R.—Messrs. A. Riddle and Co., Lond.; Royal Victoria Homes, Bristol, Warden of; R. S. D.

S.—Dr. C. A. Shaw, Saba, Dutch West Indies; Dr. S.; S. A. G.; Stamford Hill Dispensary, Secretary of; Mr. H. W. Stanley, Erdington; Mesdames Sykes, Josephine, and Co., Lond.; Surgeon, Birmingham.

T.—Mr. J. A. M. Thomson, Bradford-on-Avon; Taunton and Somerset Hospital, Secretary of; Dr. E. Turner, Sinclairtown; T. G. B.; T. F. G.; T. B.; Mr. R. S. Trevor, Lond.; Teignmouth Hospital, Secretary of; Dr. T. Stevenson.

U.—U. C. H., Lamphey.

W.—Dr. G. B. Wood, Milnsbridge; Dr. A. B. Wright, Netley; W. J.; W. M. M.

Z.—Messrs. A. and M. Zimmermann, Lond.

EVERY FRIDAY. **THE LANCET.** PRICE SEVENPENCE.

SUBSCRIPTION. POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6

Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.
Terms for Position Pages and Serial Insertions on application.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an *additional* advertisement.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 8, Rue Traversière, Asnières, Paris.